Installation and Service Instructions

for use by heating contractor

Vitotronic 300
Type GW2B
Weather-compensated, digital boiler control units
For use with Boiler models VD2A, VD2 and CT3

VITOTRONIC® 300

Certified as a component part for Viessmann boilers

Product may not be exactly as shown

IMPORTANT

Read and save these instructions for future reference.

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Please file in Service Binder

Safety, Installation and Warranty Requirements

Please ensure that these instructions are read and understood before commencing installation. Failure to comply with the instructions listed below and details printed in this manual can cause product/property damage, severe personal injury, and/or loss of life. Ensure all requirements below are understood and fulfilled (including detailed information found in manual subsections).

- **Product documentation**
  Read all applicable documentation before commencing installation. Store documentation near boiler in a readily accessible location for reference in the future by service personnel.

  ▶*For a listing of applicable literature, please see section entitled "Important Regulatory and Safety Requirements".*

- **Warranty**
  Information contained in this and related product documentation must be read and followed. Failure to do so renders the warranty null and void.

- **Licensed professional heating contractor**
  The installation, adjustment, service and maintenance of this equipment must be performed by a licensed professional heating contractor.

  ▶*Please see section entitled "Important Regulatory and Installation Requirements".*

- **Advice to owner**
  Once the installation work is complete, the heating contractor must familiarize the system operator/ ultimate owner with all equipment, as well as safety precautions/requirements, shutdown procedure, and the need for professional service annually before the heating season begins.

⚠ WARNING

Installers must follow local regulations with respect to installation of carbon monoxide detectors. Follow the Viessmann maintenance schedule of the boiler contained in this manual.

Operating and Service Documentation

It is recommended that all product documentation such as parts lists, operating and service instructions be handed over to the system user for storage. Documentation is to be stored near boiler in a readily accessible location for reference by service personnel.

Product Information

This document describes Vitotronic 300 type GW2B when used:

- in a single boiler system

for Vitorond 200 VD2 / VD2A Series boiler:
Order Number 7533386
Serial No. 7514781 □□□□□□□□□

for Vitocrossal 300 CT3Series boiler:
Order Number 7534260
Serial No. 7514781 □□□□□□□□□

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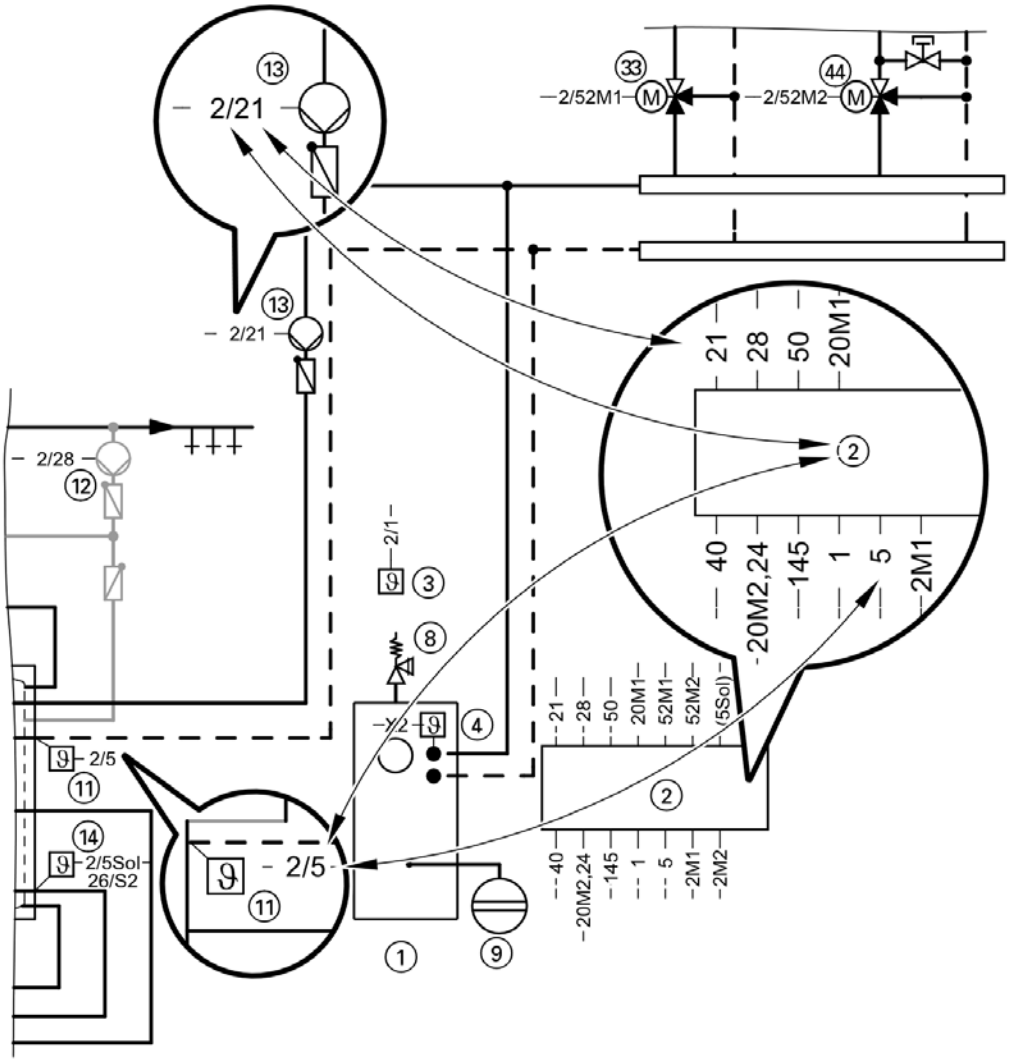
Designations in the System Examples



In the following system examples, the Vitotronic 300, type GW2B, is used as the control unit.

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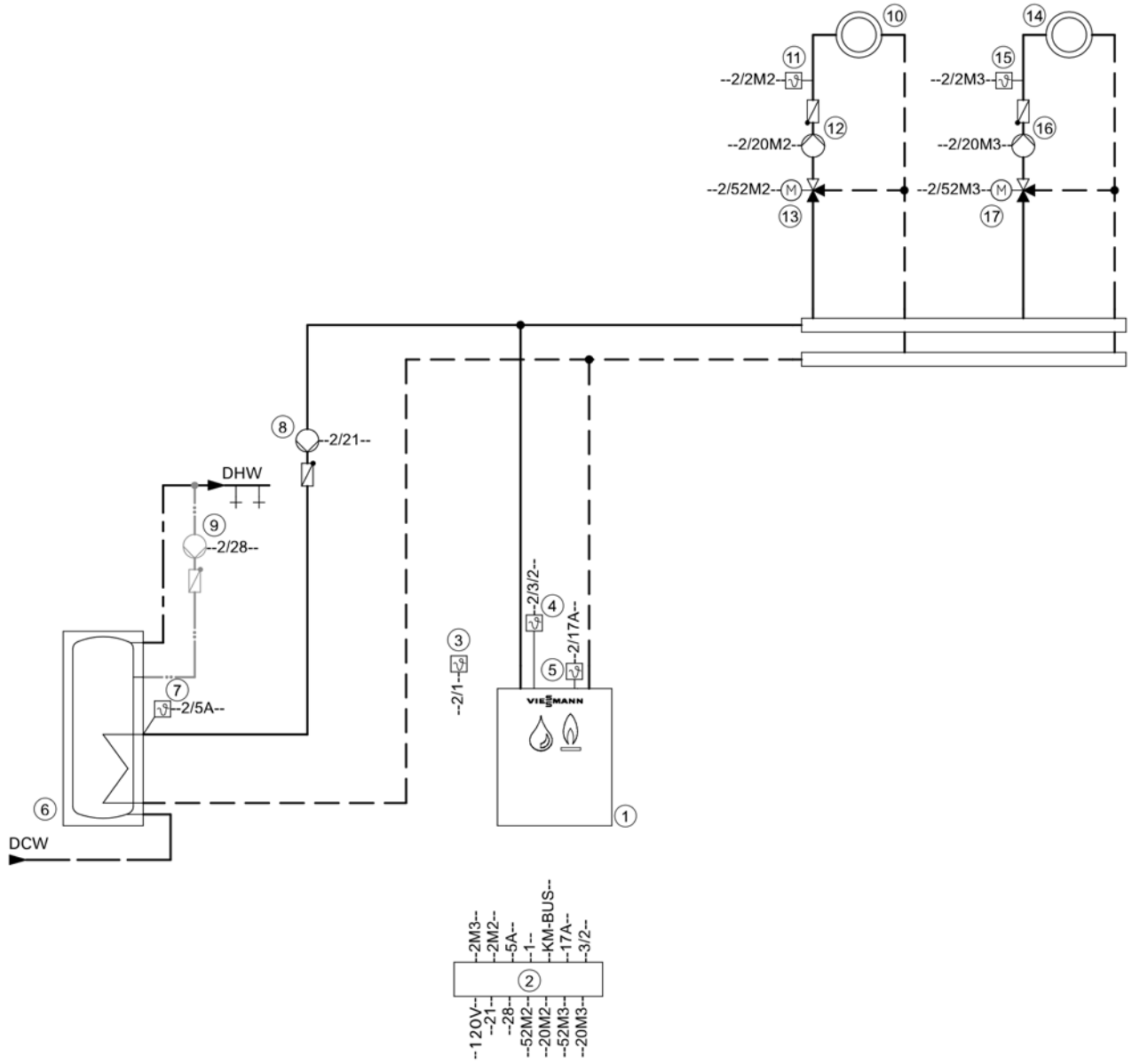
System Example 1

Single boiler system: Boiler with Therm-Control
Hydraulic installation scheme



Note: This scheme is a basic example without shut-off devices or safety equipment.
This does not replace the need for professional planning on site.

System Example 1 *(continued)*

Equipment required

Pos.	Description
①	Boiler
②	Vitotronic 300 GW2B
③	Outside temperature sensor ATS
④	Boiler water temperature sensor KTS
⑤	Therm-Control temperature sensor
㊹	ON/OFF switch (on site)
⑥	DHW tank
⑦	DHW tank temperature sensor STS
⑧	DHW pump UPSB
⑨	DHW recirculation pump ZP
⑩	Heating circuit 2
⑫	Heating circuit pump M2 Mixing valve extension kit:
⑪	Supply temperature sensor M2 as contact temperature sensor and
⑬	Mixing valve motor M2 or Supply temperature sensor M2 as
⑪	- Contact temperature sensor or - Immersion temperature sensor and
⑬	Mixing valve motor for flanged mixing valve M2
⑭	Heating circuit 3
⑯	Heating circuit pump M3 Mixing valve extension kit:
⑮	Supply temperature sensor M3 as contact temperature sensor and
⑰	Mixing valve motor M3 or Supply temperature sensor M3 as
⑮	- Contact temperature sensor or - Immersion temperature sensor and
⑰	Mixing valve motor for flanged mixing valve M3

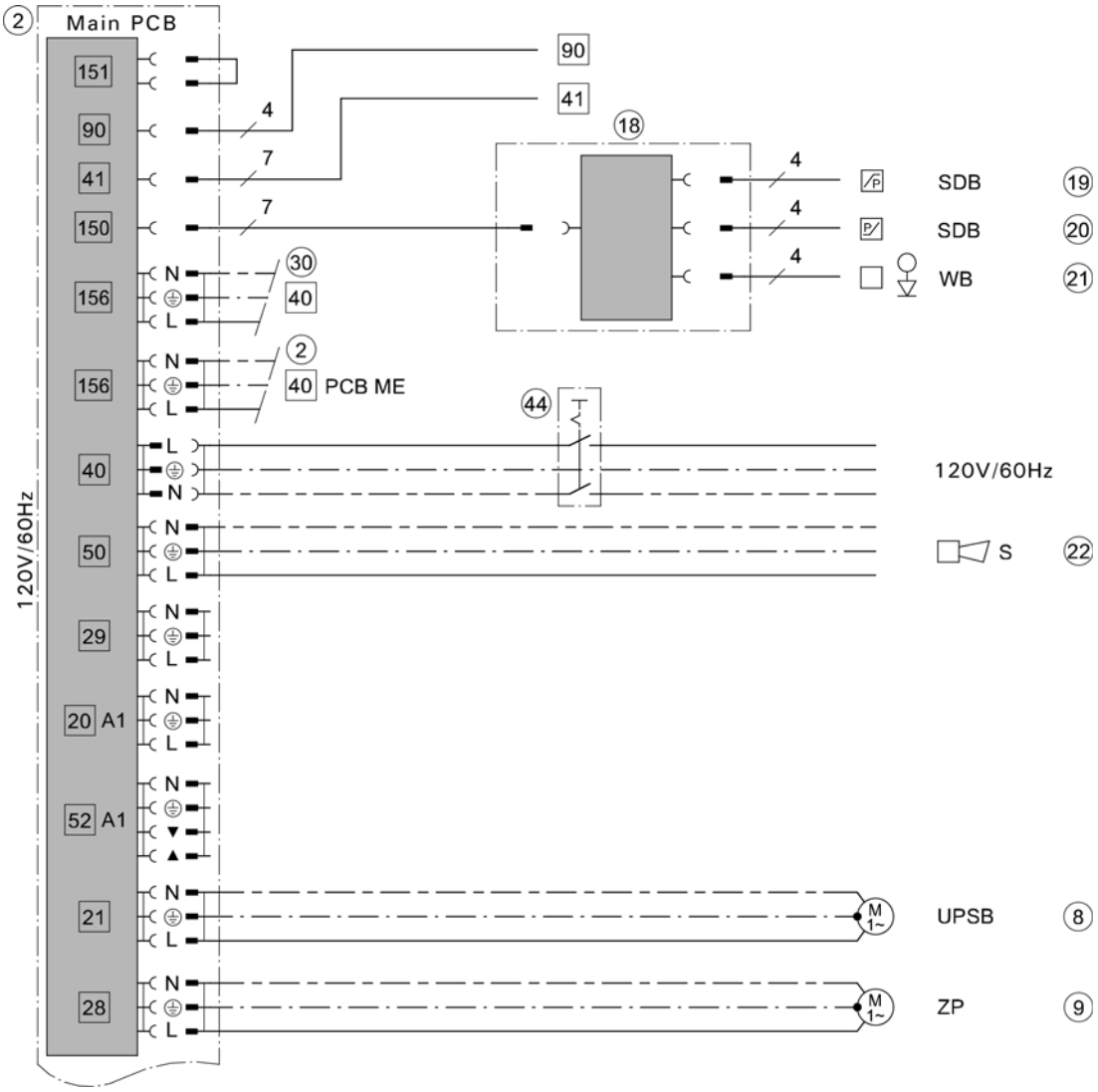
System Example 1 *(continued)*

Equipment required

Pos.	Description
	Accessories
⑱	Connection to safety equipment [150] (see page 43)
⑲	Minimum pressure switch or limiter SDB
⑳	Maximum pressure limiter SDB
㉑	Water level limiter (low water cut-off) WB
㉒	Central fault message system S
㉓	Flue gas temperature sensor AGS
㉔	Vitotrol 200A or Vitotrol 300A
㉖	Contactor relay
㉗	Downstream heating circuit controller, switching contact closed: Signal for mixing valve “Close”
㉚	Extension EA1
㉛	1 analog input (0 – 10V) - Specification of the set boiler water temperature
㉜	3 digital inputs - External heating program changeover, separately adjustable for heating circuits 1 to 3 - External demand - External blocking with fault message input - Fault message input - Short term operation of DHW recirculation pump
㉝	1 switching output (floating changeover contact) - Switching a feed pump to a substation - Signalling reduced mode for a heating circuit External hook-ups
㉞	- External demand
㉟	- External changeover of stepped/modulating burners
㊱	- External blocking/mixing valve closed
㊲	- External changeover of heating program/external mixing valve open
㊴	Vitocom 100
㊵	KM BUS distributor, for several KM BUS participants
㊶	LON communication module for communication with the following components: Vitotronic 200-H

System Example 1 *(continued)*

Electrical installation scheme
Main PCB 120V



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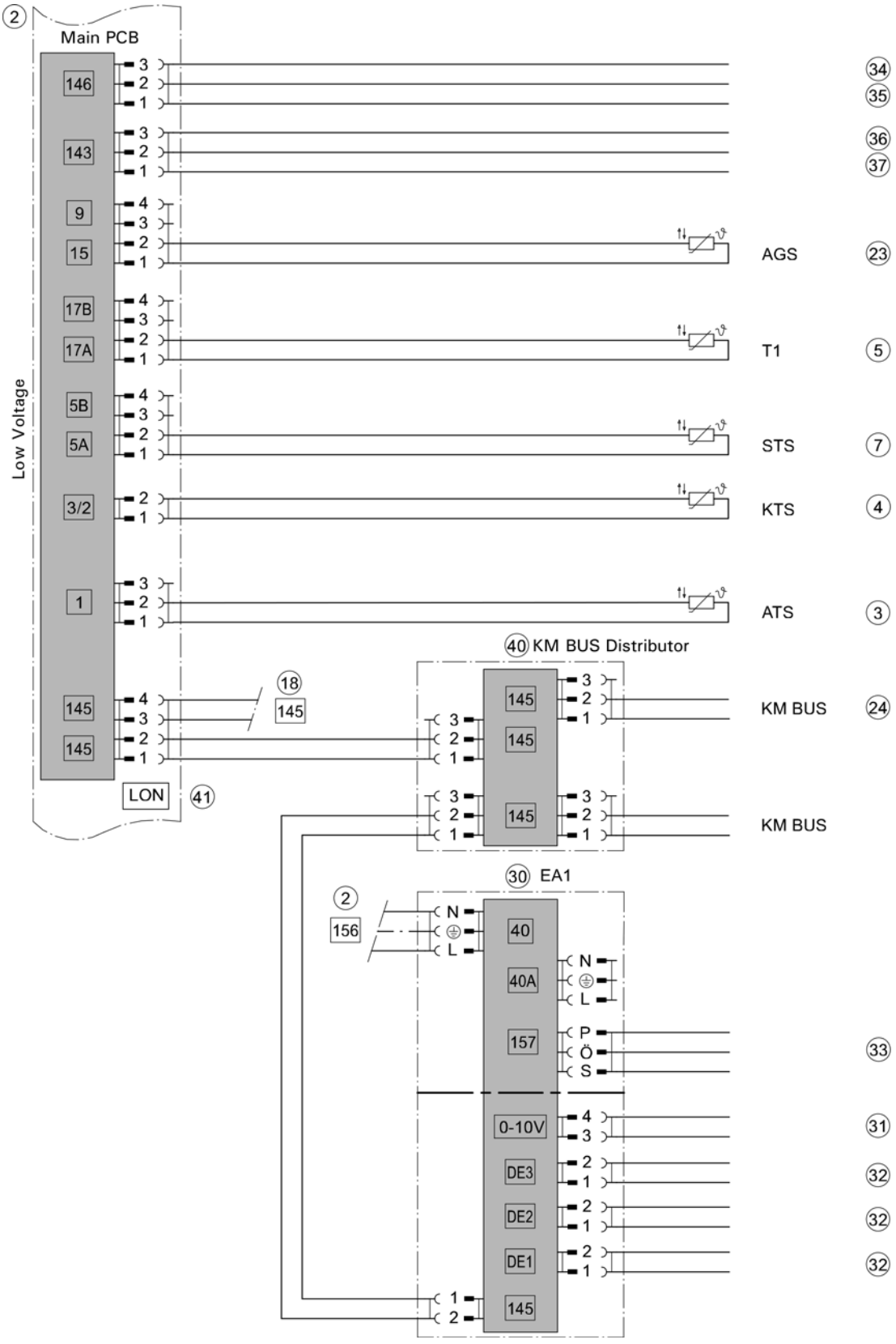
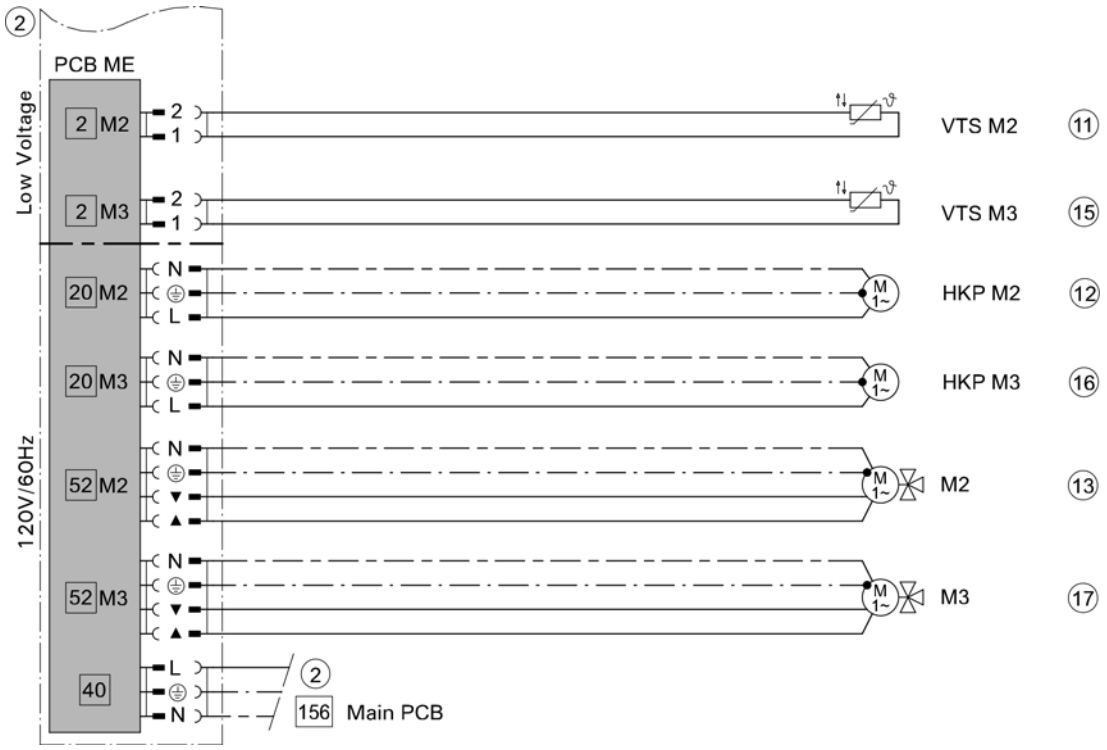
System Example 1 *(continued)*

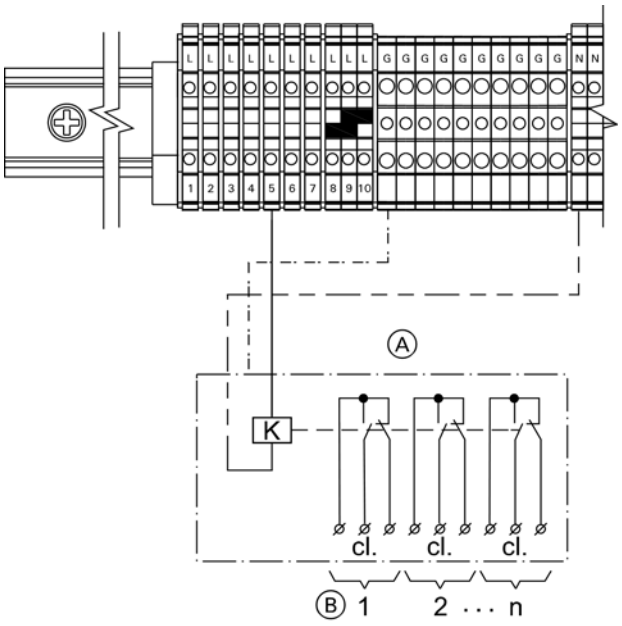
Main PCB LV connections



System Example 1 *(continued)*

Mixing valve extension PCB





Wiring diagram

Closing mixing valves installed downstream via temperature sensor T1 in heating systems with heating circuit control units that are not connected to the boiler control unit via LON.

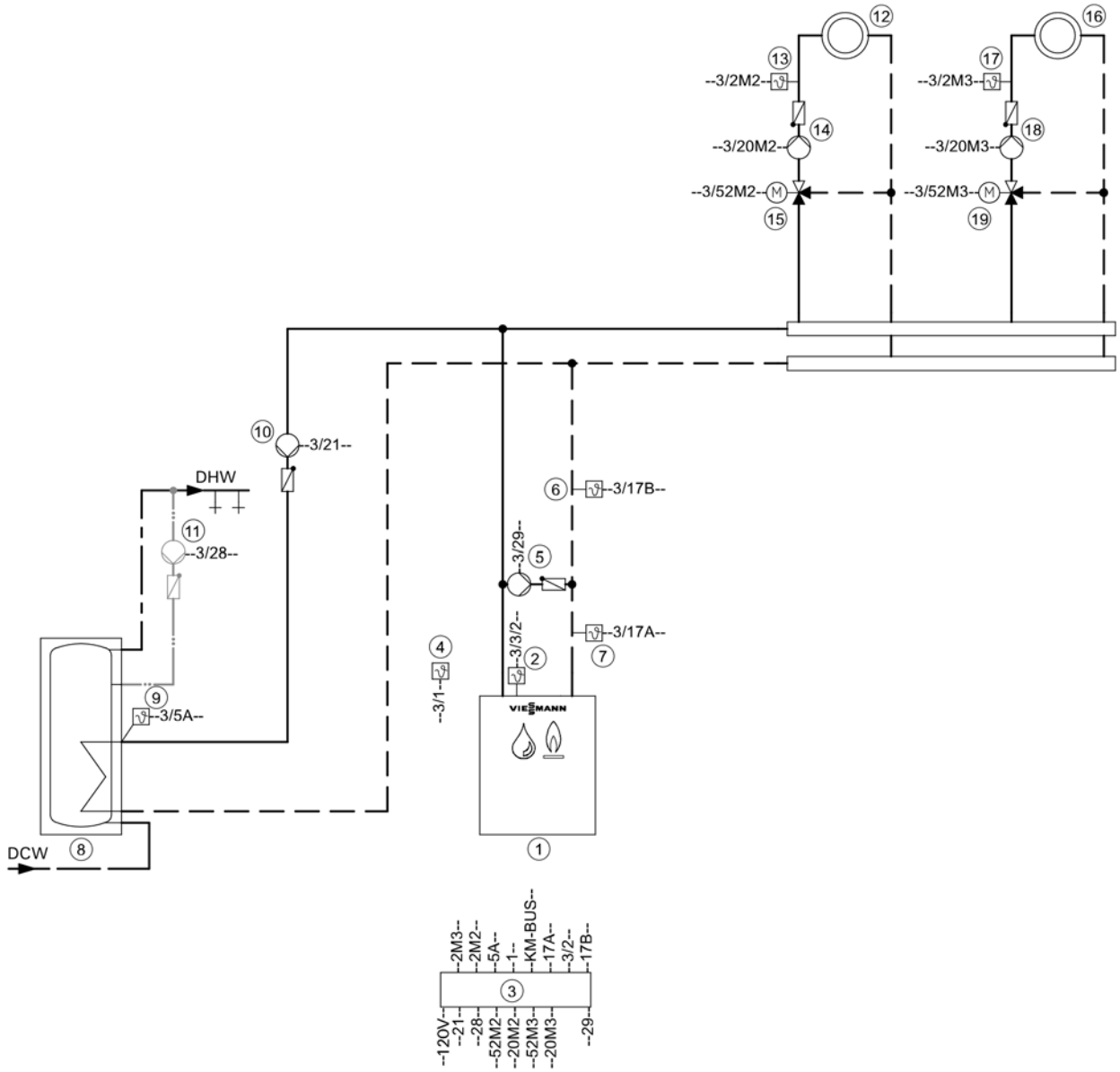
Required code

4C:2	"General" group	Use of plug 20 A1 to close the downstream mixing valves.
0d:1	"Boiler" group	Temperature sensor Therm-Control affects the mixing valves of downstream heating circuits (factory set condition).

System Example 2

Single boiler system: Boiler with shunt pump for return temperature raising

Hydraulic installation scheme



Note: This scheme is a basic example without shut-off devices or safety equipment.
This does not replace the need for professional planning on site.

System Example 2 *(continued)*

Equipment required

Pos.	Description
①	Boiler
②	Boiler water temperature sensor KTS
③	Vitotronic 300 GW2B
④	Outside temperature sensor ATS
⑤	Shunt pump BP
⑥	Temperature sensor T2 - Contact temperature sensor or - Immersion temperature sensor
⑦	Temperature sensor T1 - Contact temperature sensor or - Immersion temperature sensor
㊹	ON/OFF switch (on site)
⑧	DHW tank
⑨	DHW tank temperature sensor STS
⑩	DHW pump UPSB
⑪	DHW recirculation pump ZP
⑫	Heating circuit 2
⑭	Heating circuit pump M2 Mixing valve extension kit:
⑬	Mixing valve motor for flanged mixing valve M2
⑭	Heating circuit 3
⑮	Mixing valve motor M2 or Supply temperature sensor M2 as
⑬	- Contact temperature sensor or - Immersion temperature sensor and
⑮	Mixing valve motor for flanged mixing valve M2
⑯	Heating circuit 3
⑱	Heating circuit pump M3 Mixing valve extension kit:
⑰	Supply temperature sensor M3 as contact temperature sensor and
⑲	Mixing valve motor M3 or Supply temperature sensor M3 as contact temperature sensor

System Example 2 *(continued)*

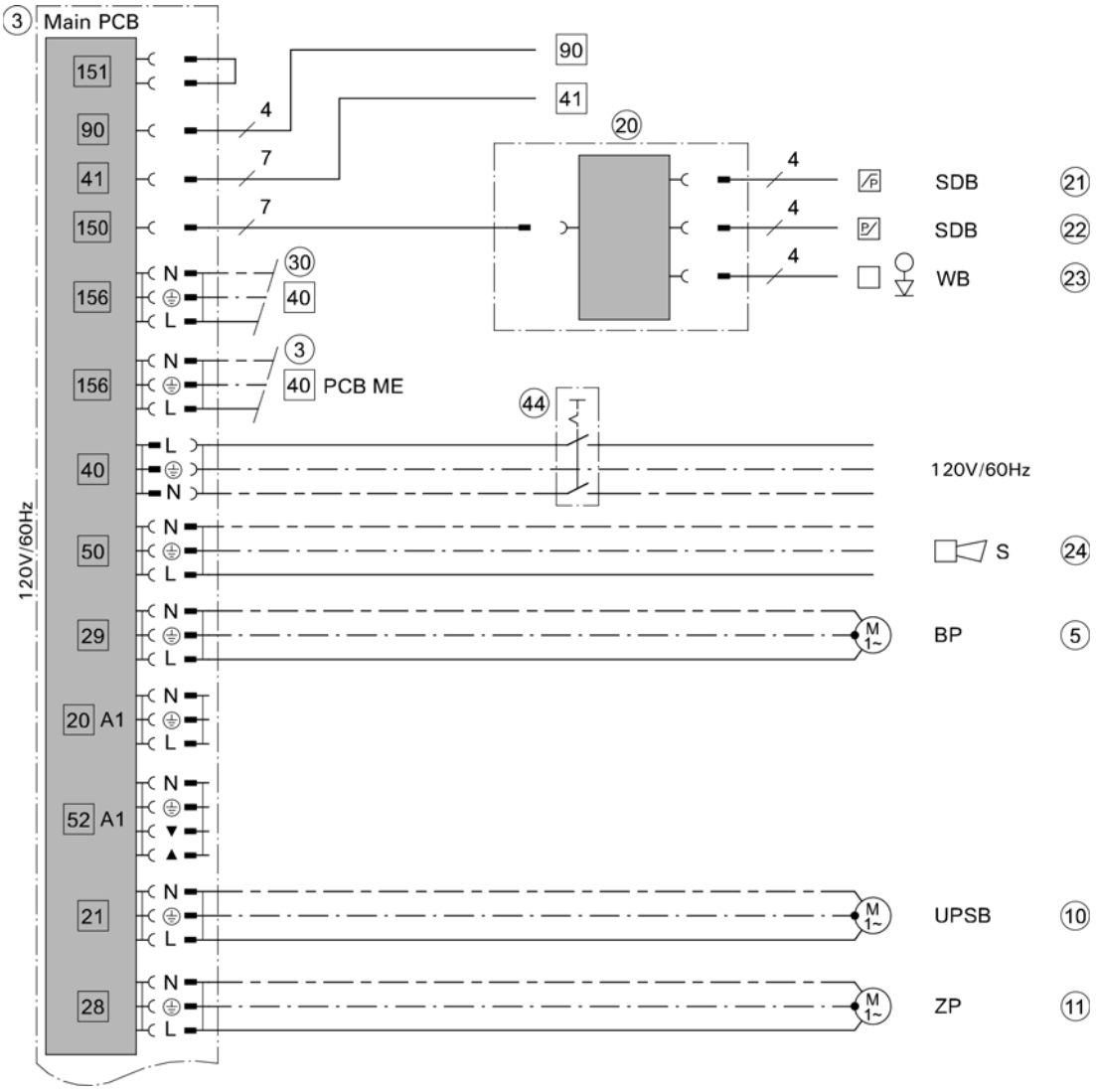
Equipment required

Pos.	Description
⑰	- Contact temperature sensor or - Immersion temperature sensor and
⑲	Mixing valve motor for flanged mixing valve M3
	Accessories
⑳	Connection to safety equipment [150] (see page 43)
㉑	Minimum pressure switch or limiter SDB
㉒	Maximum pressure limiter SDB
㉓	Water level limiter (low water cut-off) WB
㉔	Central fault message system S
㉕	Flue gas temperature sensor AGS
㉖	Vitotrol 200A or Vitotrol 300A
㉘	Contactor relay
㉙	Downstream heating circuit controller, switching contact closed: Signal for mixing valve “Close”
㉚	Extension EA1
㉛	1 analog input (0 – 10V) - Specification of the set boiler water temperature
㉜	3 digital inputs - External heating program changeover, separately adjustable for heating circuits 1 to 3 - External demand - External blocking with fault message input - Fault message input - Short term operation of DHW recirculation pump
㉝	1 switching output (floating changeover contact) - Switching a feed pump to a substation - Signalling reduced mode for a heating circuit External hook-ups
㉞	- External demand
㉟	- External changeover of stepped/modulating burners
㊱	- External blocking/mixing valve closed
㊲	- External changeover of heating program/external mixing valve open
㊴	Vitocom 100
㊵	KM BUS distributor, for several KM BUS participants
㊶	LON communication module for communication with the following components: Vitotronic 200-H

System Example 2 *(continued)*

Electrical installation scheme

Main PCB 120V



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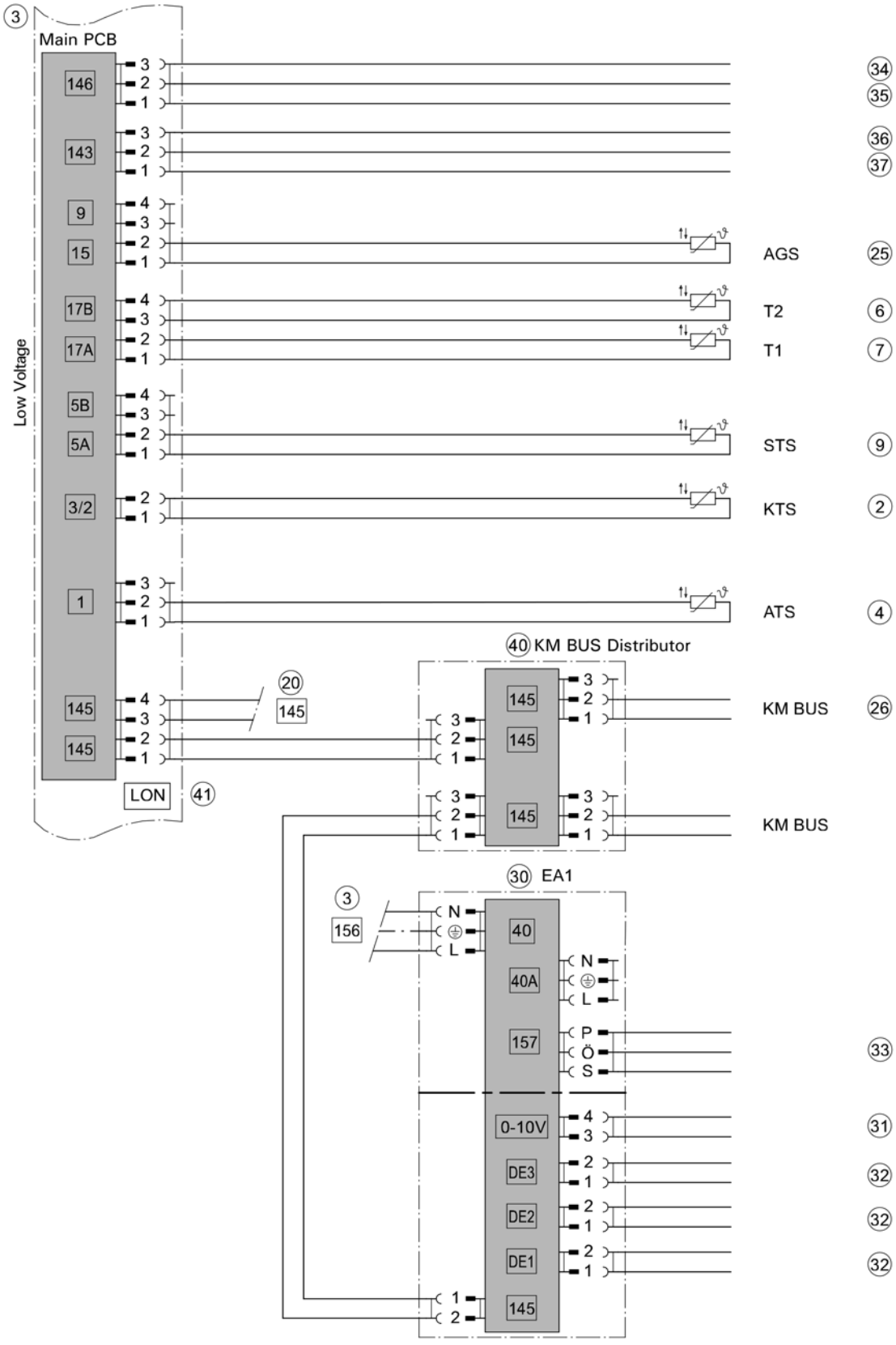
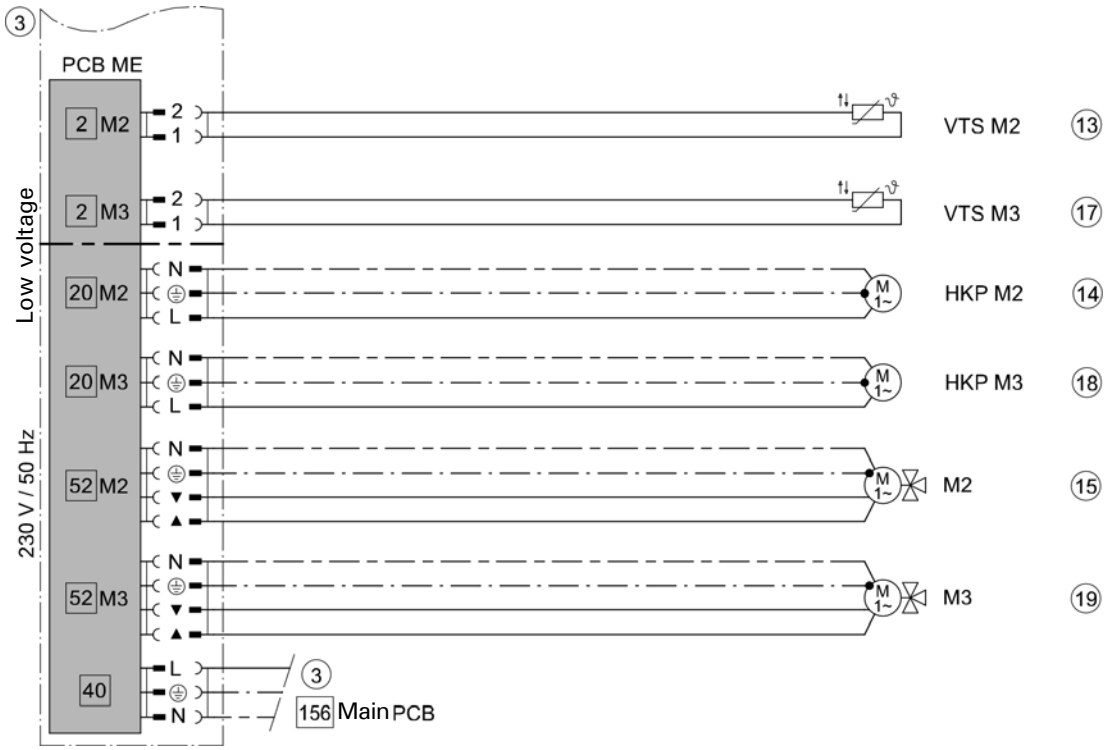
System Example 2 *(continued)*

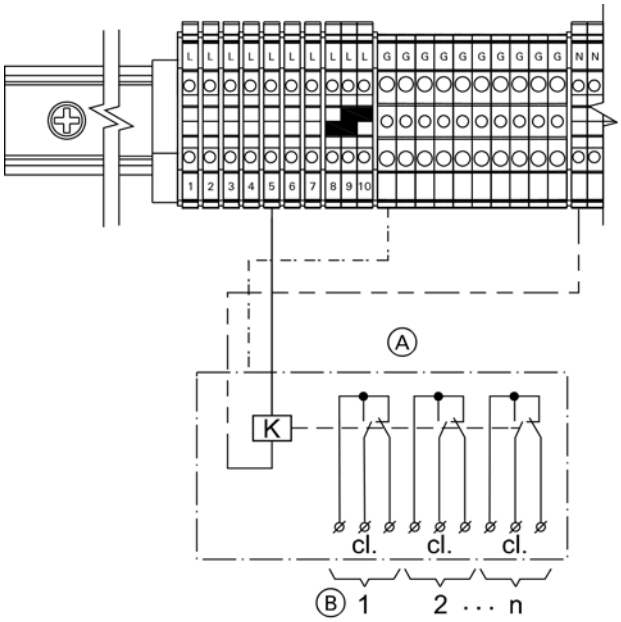
Main PCB LV connections



System Example 2 *(continued)*

Mixing valve extension PCB





Wiring diagram

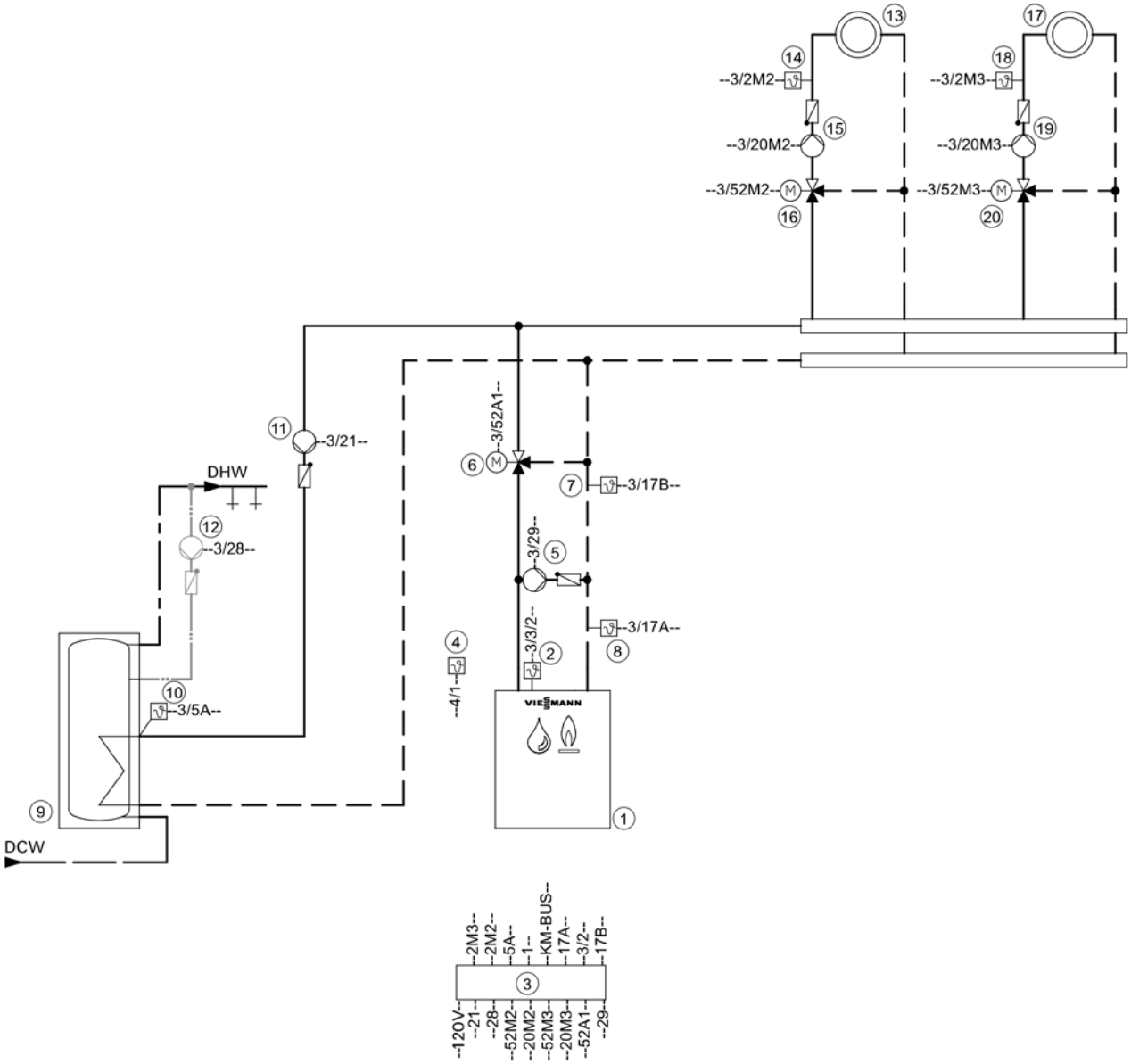
Closing mixing valves installed downstream via temperature sensor T1 in heating systems with heating circuit control units that are not connected to the boiler control unit via LON.

Required code		
4C:2	"General" group	Use of plug 20 A1 to close the downstream mixing valves.
0d:1	"Boiler" group	Temperature sensor T1/Therm-Control affects the mixing valves of downstream heating circuits (factory set condition).

System Example 3

Single boiler system: Boiler with shunt pump and 3-way mixing valve for return temperature control

Hydraulic installation scheme



Note: This scheme is a basic example without shut-off devices or safety equipment.
This does not replace the need for professional planning on site.

System Example 3 *(continued)*

Equipment required

Pos.	Description
①	Boiler
②	Boiler water temperature sensor KTS
③	Vitotronic 300 GW2B
④	Outside temperature sensor ATS
⑤	Shunt pump BP
⑥	3-way mixing valve
⑦	Temperature sensor T2 - Contact temperature sensor or - Immersion temperature sensor
⑧	Temperature sensor T1 - Contact temperature sensor or - Immersion temperature sensor
㊹	ON/OFF switch (on site)
⑨	DHW tank
⑩	DHW tank temperature sensor STS
⑪	DHW pump UPSB
⑫	DHW recirculation pump ZP
⑬	Heating circuit 2
⑮	Heating circuit pump M2 Mixing valve extension kit:
⑭	Supply temperature sensor M2 as contact temperature sensor and
⑯	Mixing valve motor for flanged mixing valve M2
⑰	Heating circuit 3
⑲	Heating circuit pump M3 Mixing valve extension kit:
⑱	Supply temperature sensor M3 as contact temperature sensor and
⑳	Mixing valve motor M3 or Supply temperature sensor M3 as contact temperature sensor

System Example 3 *(continued)*

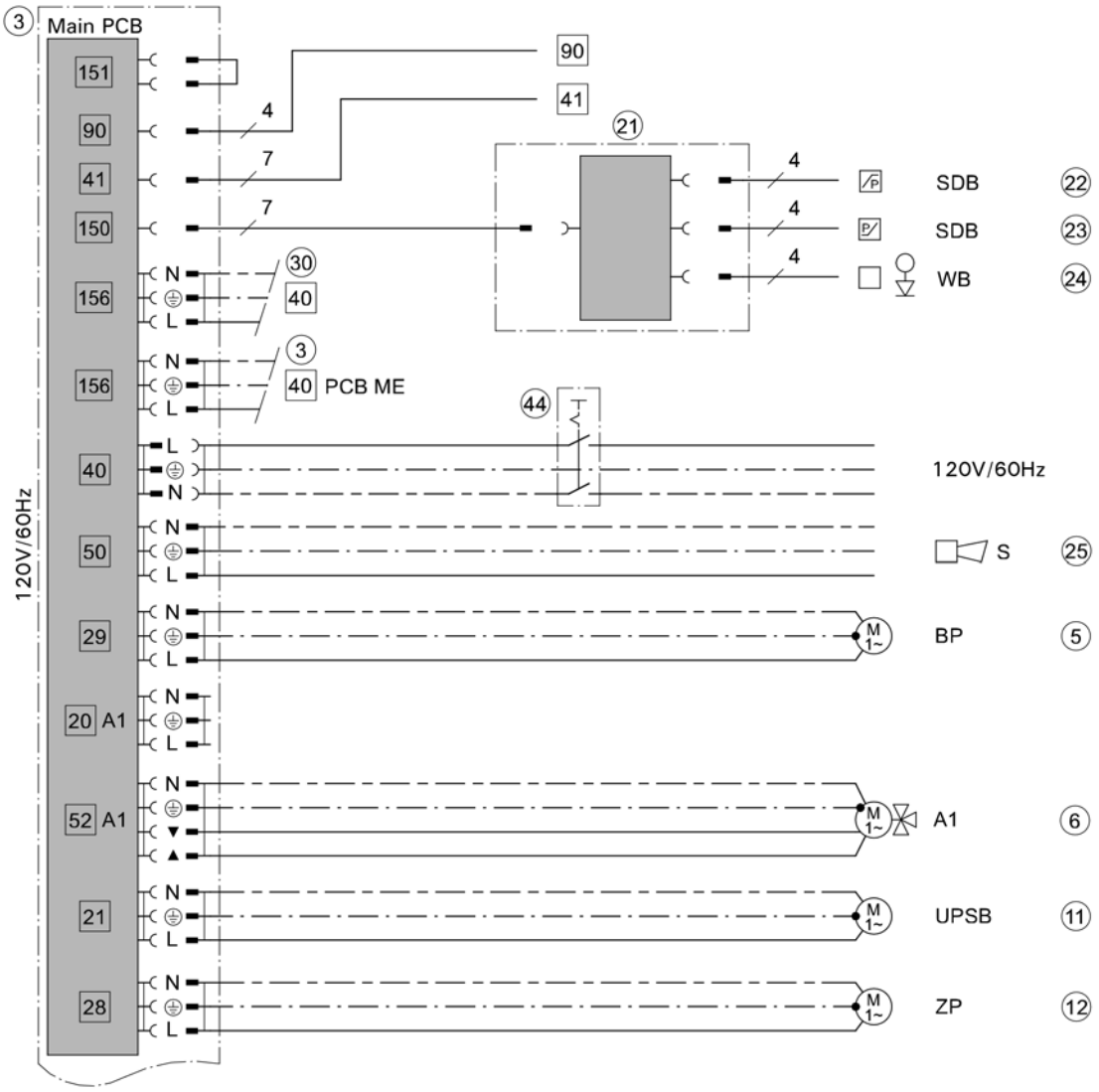
Equipment required

Pos.	Description
⑱	- Contact temperature sensor or - Immersion temperature sensor and
⑳	Mixing valve motor for flanged mixing valve M3
	Accessories
㉑	Connection to safety equipment [150] (see page 20)
㉒	Minimum pressure switch or limiter SDB
㉓	Maximum pressure limiter SDB
㉔	Water level limiter (low water cut-off) WB
㉕	Central fault message system S
㉖	Flue gas temperature sensor AGS
㉗	Vitotrol 200A or Vitotrol 300A
㉚	Extension EA1
㉛	1 analog input (0 – 10V) - Specification of the set boiler water temperature
㉜	3 digital inputs - External heating program changeover, separately adjustable for heating circuits 1 to 3 - External demand - External blocking with fault message input - Fault message input - Short term operation of DHW recirculation pump
㉝	1 switching output (floating changeover contact) - Switching a feed pump to a substation - Signalling reduced mode for a heating circuit External hook-ups
㉞	- External demand
㉟	- External changeover of stepped/modulating burners
㊱	- External blocking/mixing valve closed
㊲	- External changeover of heating program/external mixing valve open
㊴	Vitocom 100
㊵	KM BUS distributor, for several KM BUS participants
㊶	LON communication module for communication with the following components: Vitotronic 200-H

System Example 3 *(continued)*

Electrical installation scheme

Main PCB 120V



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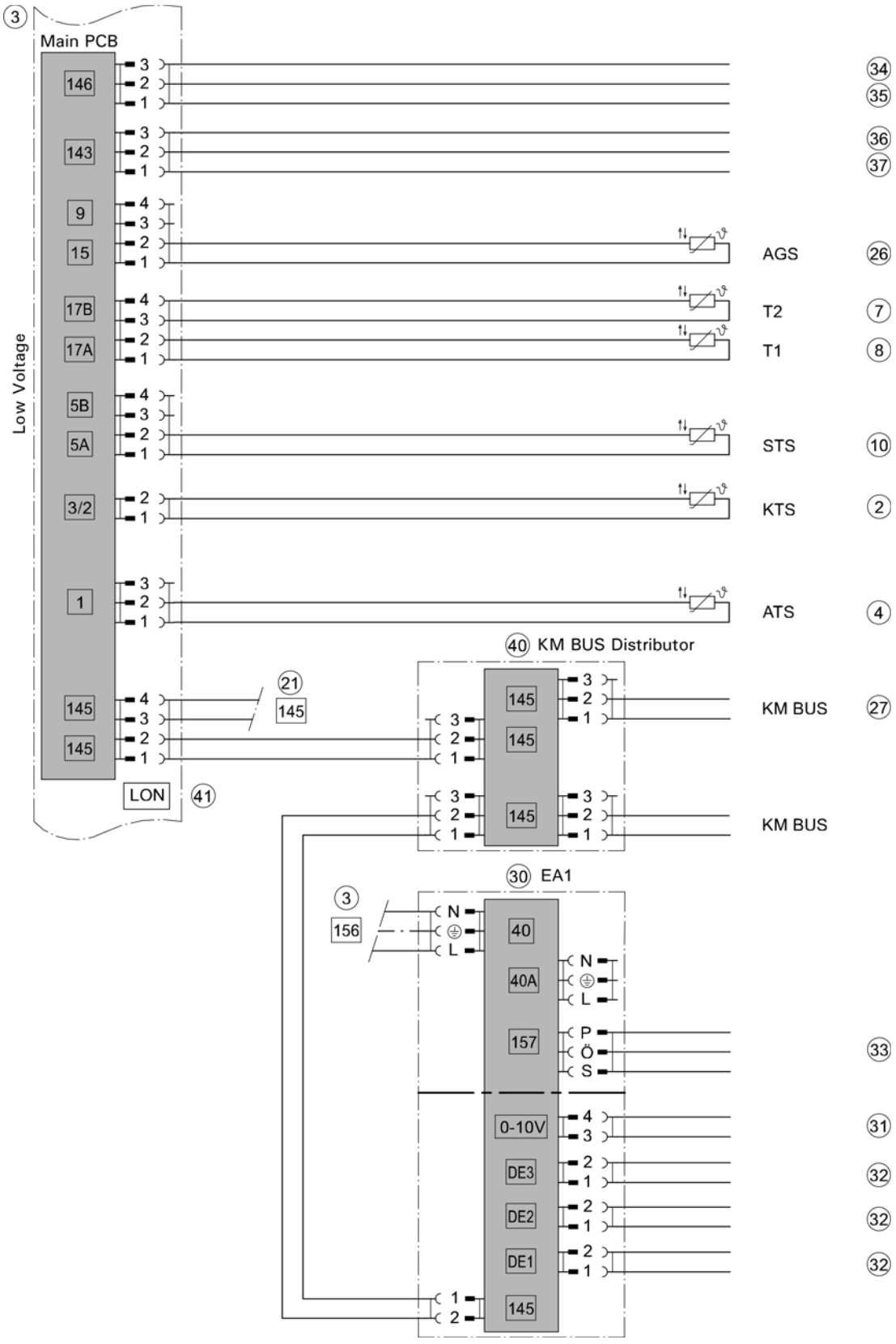
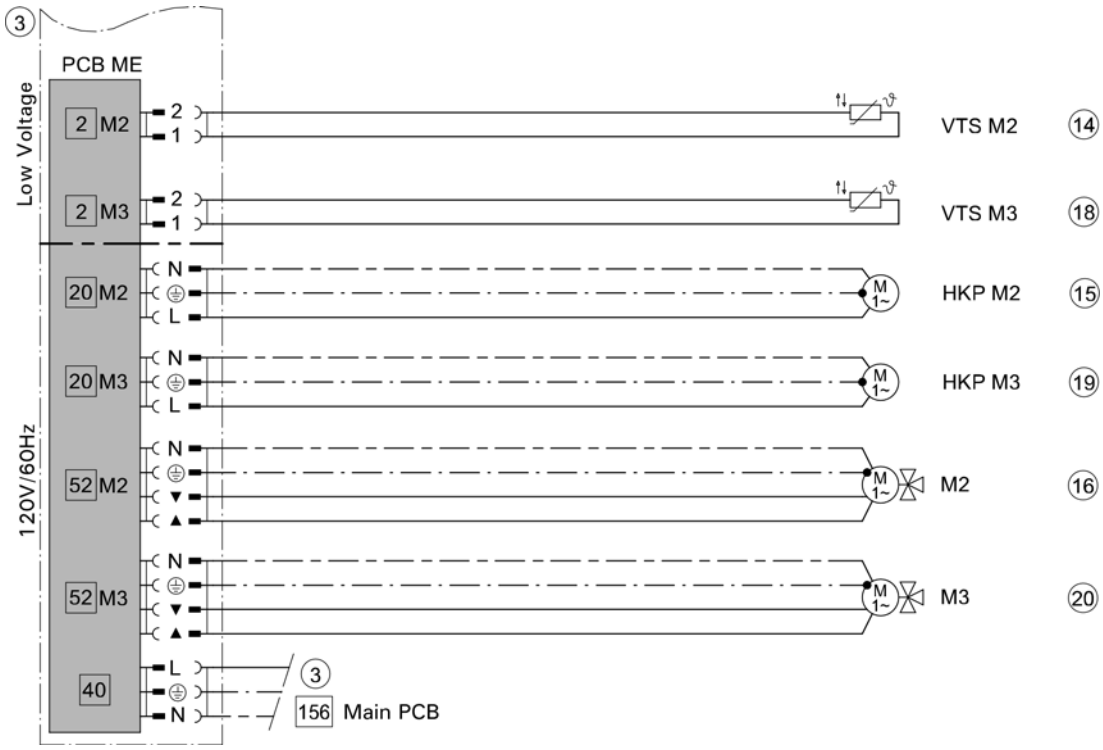
System Example 3 *(continued)*

Main PCB LV connections



System Example 3 *(continued)*

Mixing valve extension PCB



Required code

0C:1	"Boiler" group	Constant return temperature control.
4E:1	"General" group	Connection plug 52 A1 motor for 3-way mixing valve for return temperature control.

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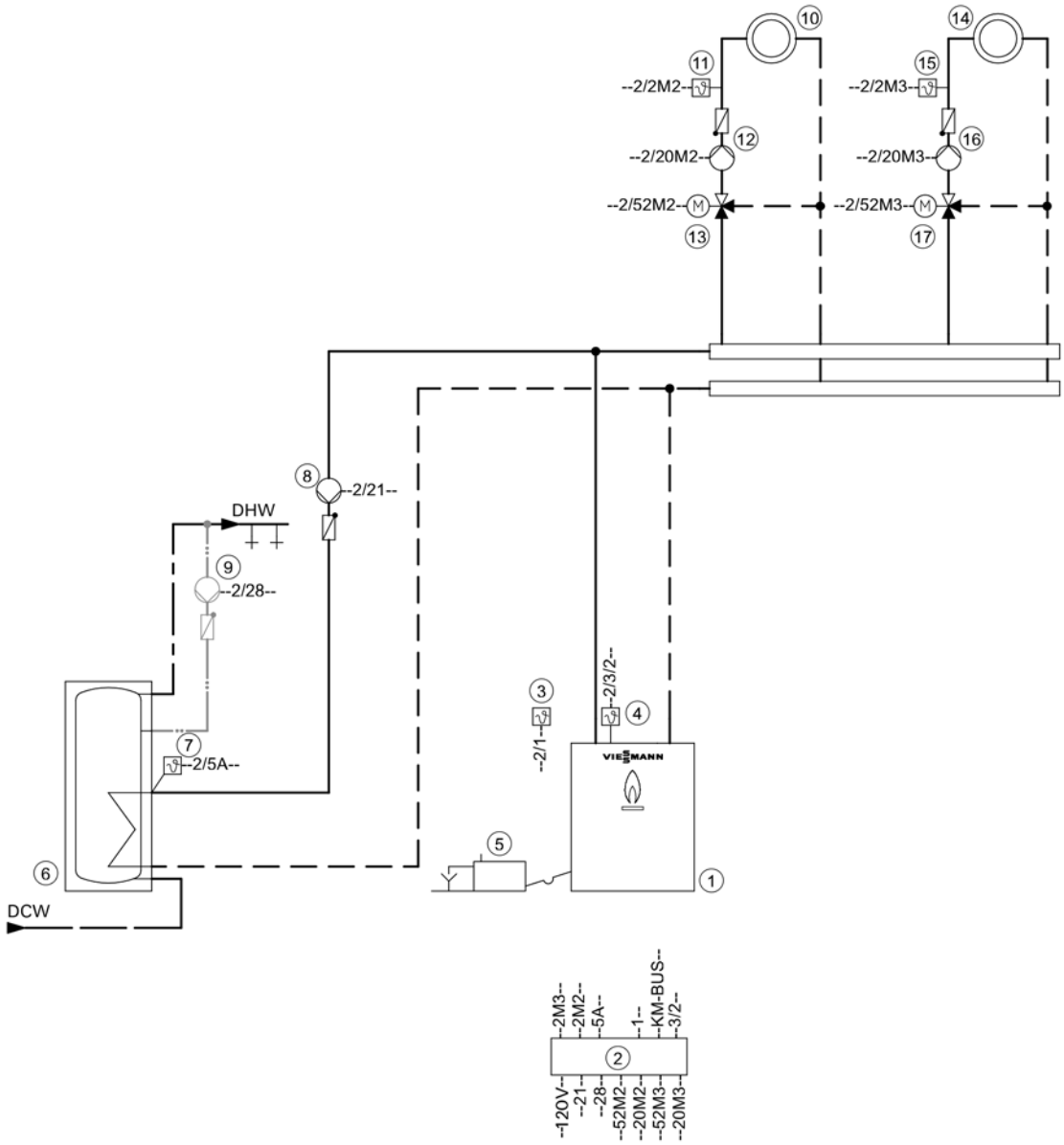
System Example 4

Single boiler system with Vitocrossal

Hydraulic installation scheme



Note: This scheme is a basic example without shut-off devices or safety equipment.
This does not replace the need for professional planning on site.

System Example 4 *(continued)*

Equipment required

Pos.	Description
①	Boiler
②	Vitotronic 300 GW2B
③	Outside temperature sensor ATS
④	Boiler water temperature sensor KTS
⑤	Neutralizing system
㊹	ON/OFF switch (on site)
⑥	DHW tank
⑦	DHW tank temperature sensor STS
⑧	DHW pump UPSB
⑨	DHW recirculation pump ZP
⑩	Heating circuit 2
⑫	Heating circuit pump M2 Mixing valve extension kit:
⑪	Supply temperature sensor M2 as contact temperature sensor and
⑬	Mixing valve motor M2 or Supply temperature sensor M2 as
⑪	- Contact temperature sensor or - Immersion temperature sensor and
⑬	Mixing valve motor for flanged mixing valve M2
⑭	Heating circuit 3
⑯	Heating circuit pump M3 Mixing valve extension kit:
⑮	Supply temperature sensor M3 as contact temperature sensor and
⑰	Mixing valve motor M3 or Supply temperature sensor M3 as
⑮	- Contact temperature sensor or - Immersion temperature sensor and
⑰	Mixing valve motor for flanged mixing valve M3

System Example 4 *(continued)*

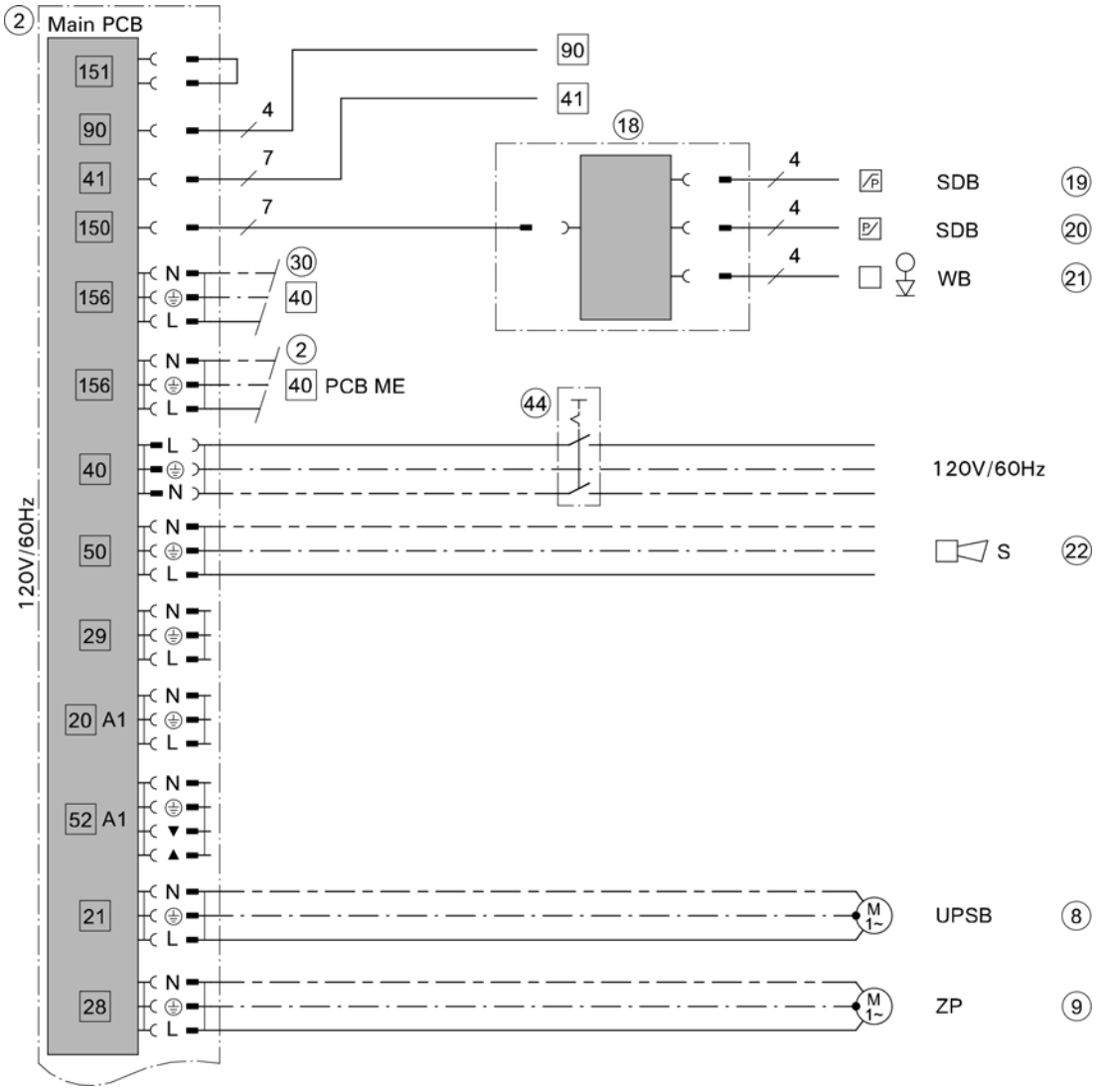
Equipment required

Pos.	Description
⑱	Connection to safety equipment [150] (see page 43)
⑲	Minimum pressure switch or limiter SDB
⑳	Maximum pressure limiter SDB
㉑	Water level limiter (low water cut-off) WB
㉒	Central fault message system S
㉓	Flue gas temperature sensor AGS
㉔	Vitotrol 200A or Vitotrol 300A
㉚	Extension EA1
㉛	1 analog input (0 – 10V) - Specification of the set boiler water temperature
㉜	3 digital inputs - External heating program changeover, separately adjustable for heating circuits 1 to 3 - External demand - External blocking with fault message input - Fault message input - Short term operation of DHW recirculation pump
㉝	1 switching output (floating changeover contact) - Switching a feed pump to a substation - Signalling reduced mode for a heating circuit External hook-ups
㉞	- External demand
㊱	- External blocking/mixing valve closed
㊲	- External changeover of heating program/external mixing valve open
㊴	Vitocom 100
㊵	KM BUS distributor, for several KM BUS participants
㊶	LON communication module for communication with the following components: Vitotronic 200-H

System Example 4 *(continued)*

Electrical installation scheme

Main PCB 120V



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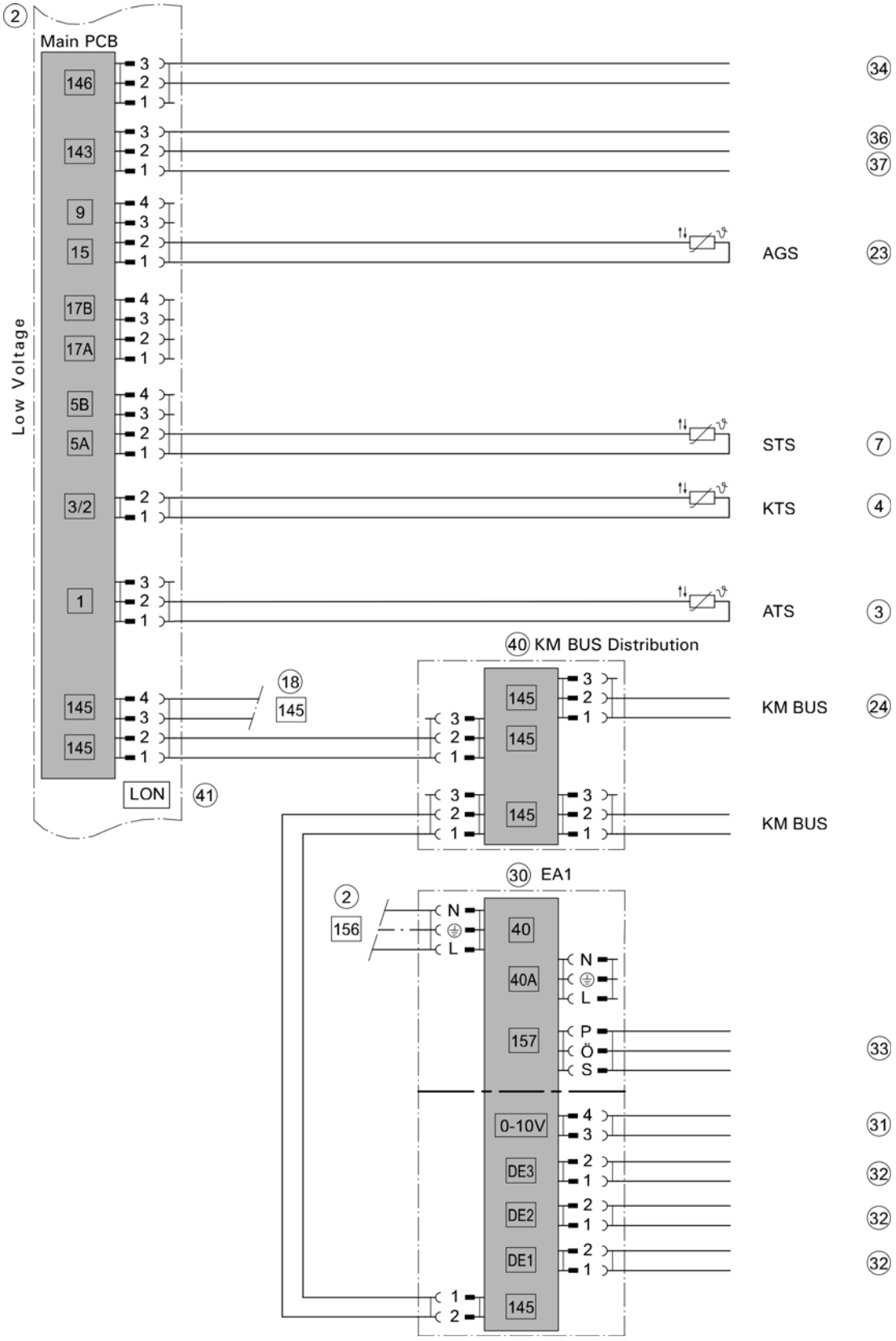
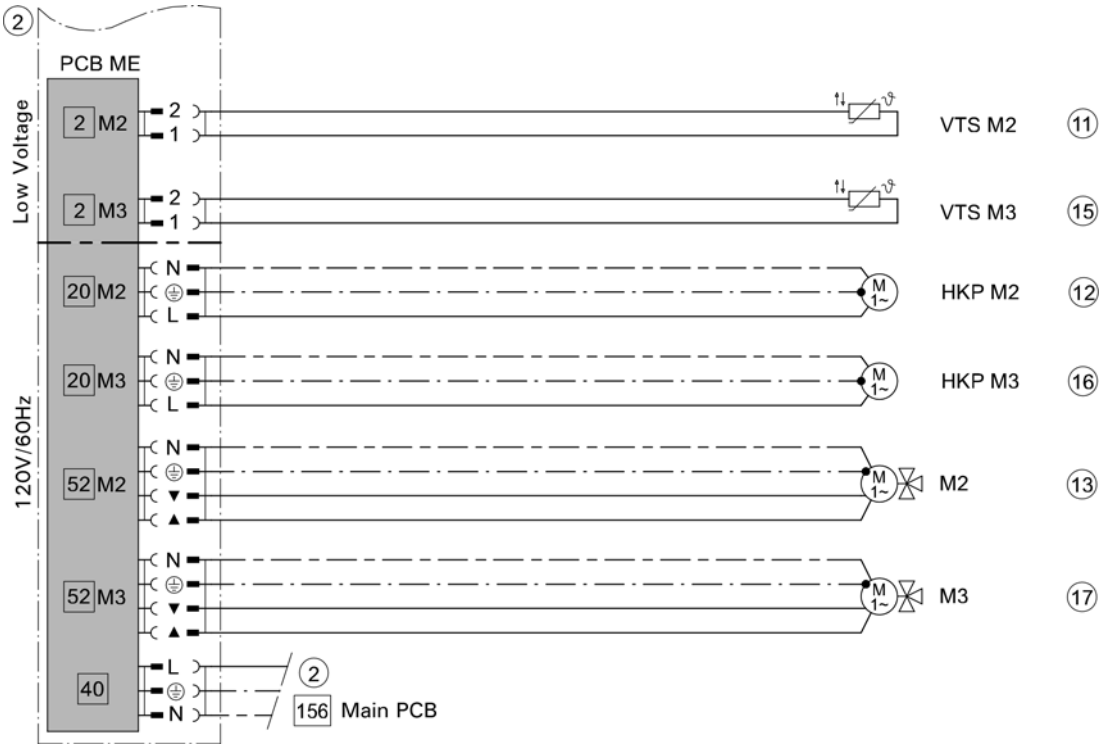
System Example 4 *(continued)*

Main PCB LV connections



System Example 4 *(continued)*

Mixing valve extension PCB



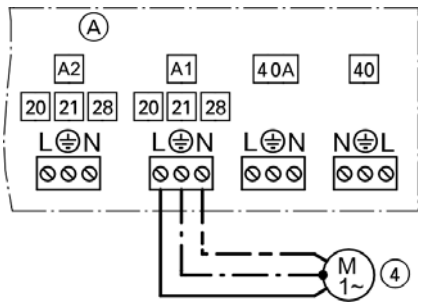
Required code

0d:0	"Boiler" group	Without Therm-Control temperature sensor.

System Extension

System versions where output 20 A1 is already used as a switching contact

Use extension AM1 Ⓐ (accessory).



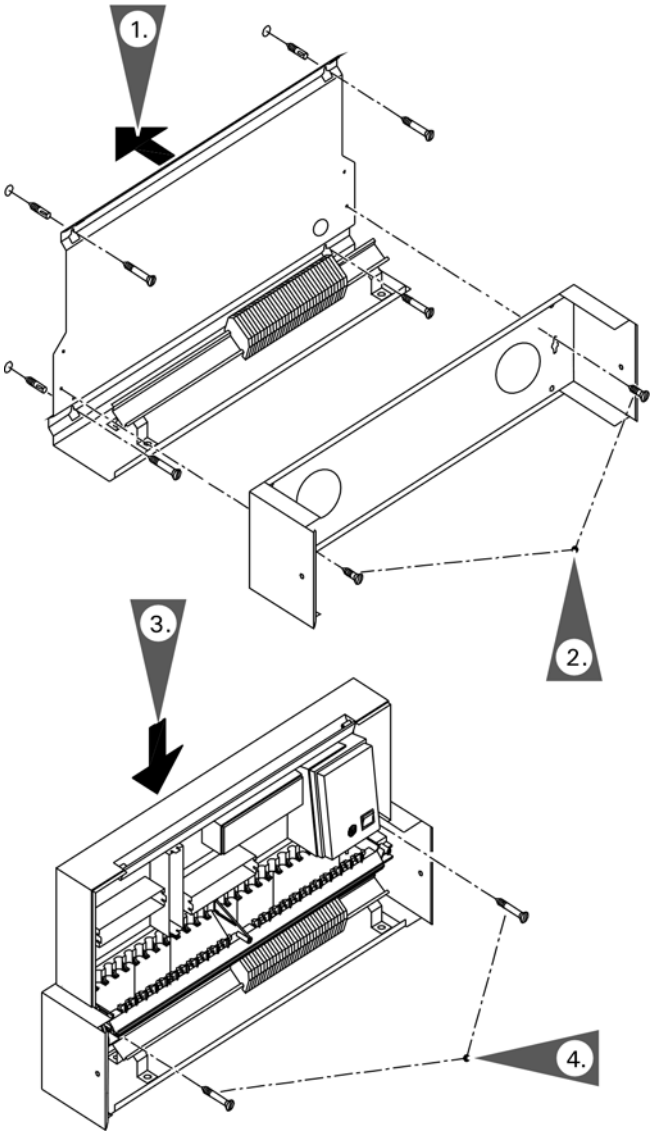
Rated current 2 A ~

If the circulation pump power consumption is above 2 A, use a contactor relay.

Required code

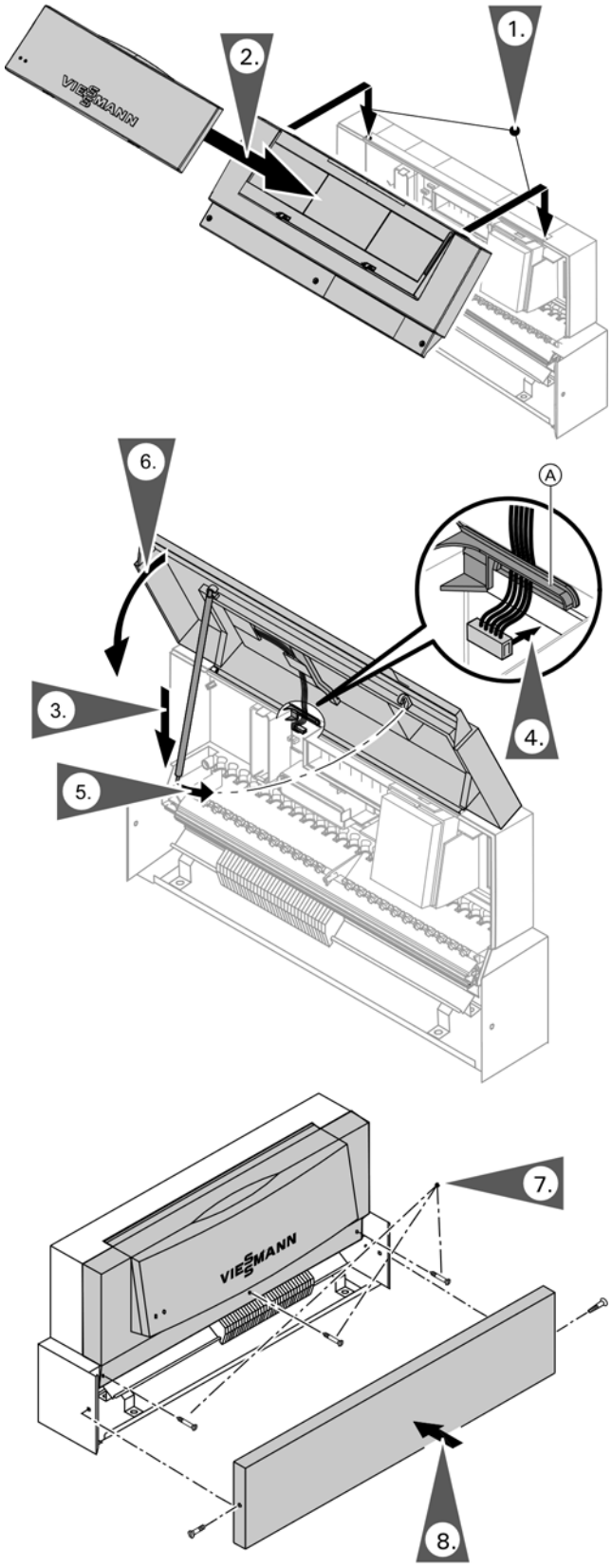
	Group	Function
33:3	1 "General"	Function output A1 at extension AM1: Circulation pump – flue gas/water heat exchanger

Mounting the Control Unit



1. Fasten the metal backplate to the mounting surface with four fasteners.
2. Fasten the junction box to the backplate with two fasteners.
3. Install the control rear section to the junction box housing. Hook the control to the backplate tabs and pivot downwards.
4. Fasten the control rear section to the junction box with two fasteners.

Fitting the Control Unit Front



1. Snap on the control cover to the control housing.
2. Snap on the interface cover to the control cover.
3. Release the stay bar and lock in position.
4. Insert the plug from the programming unit to the control.
   Note: Route the ribbon cable through retainer Ⓐ.
5. Return the stay bar to the control cover and lock in position.
6. Close the control cover.
7. Secure the control cover to the front housing with supplied fasteners.
8. Install the junction box cover and support with a supplied screws.

Legend
Ⓐ Cable retaining tab

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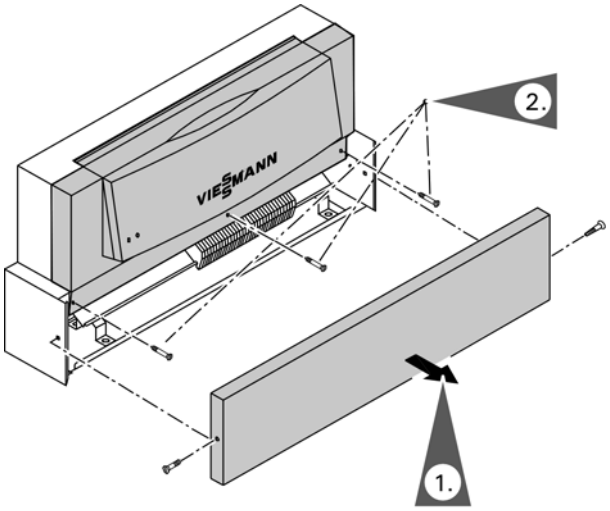
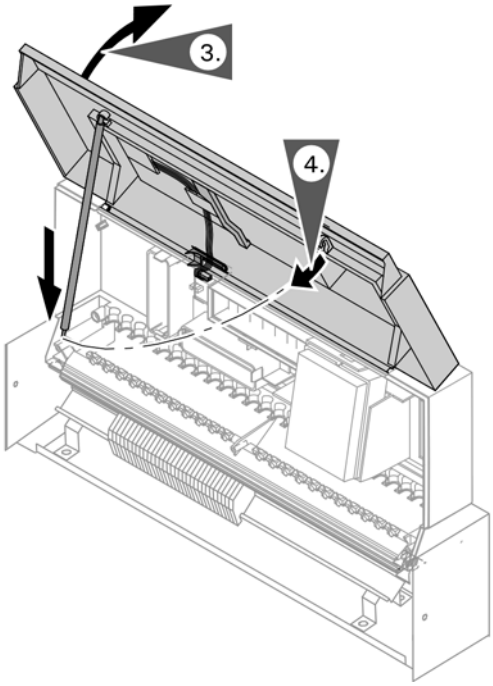
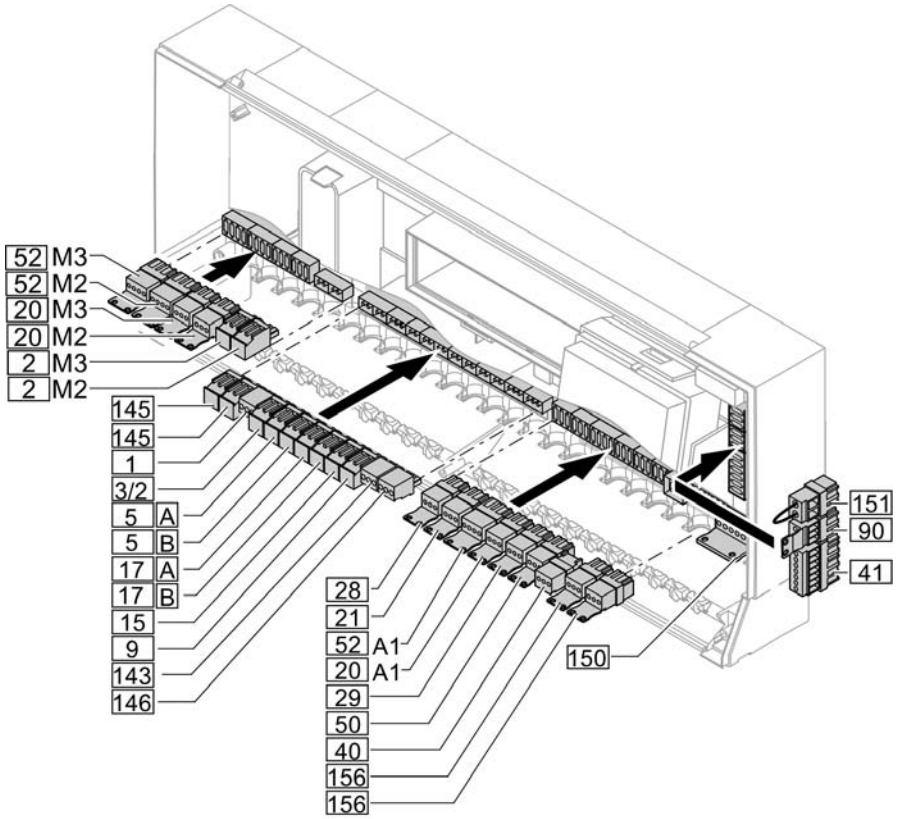
Opening the Control Unit





1. Remove the junction box cover screws and remove the cover.
2. Remove the front housing screws.
3. Swing up the front part of the control housing.
4. Position the stay bar so that it supports the front housing.

Overview of Electrical Connections



Extension for heating circuits 2 and 3 with mixing valve

- 2 M2/M3 Supply temperature sensor
- 20 M2/M3 Heating circuit pump
- 52 M2/M3 Mixing valve motor

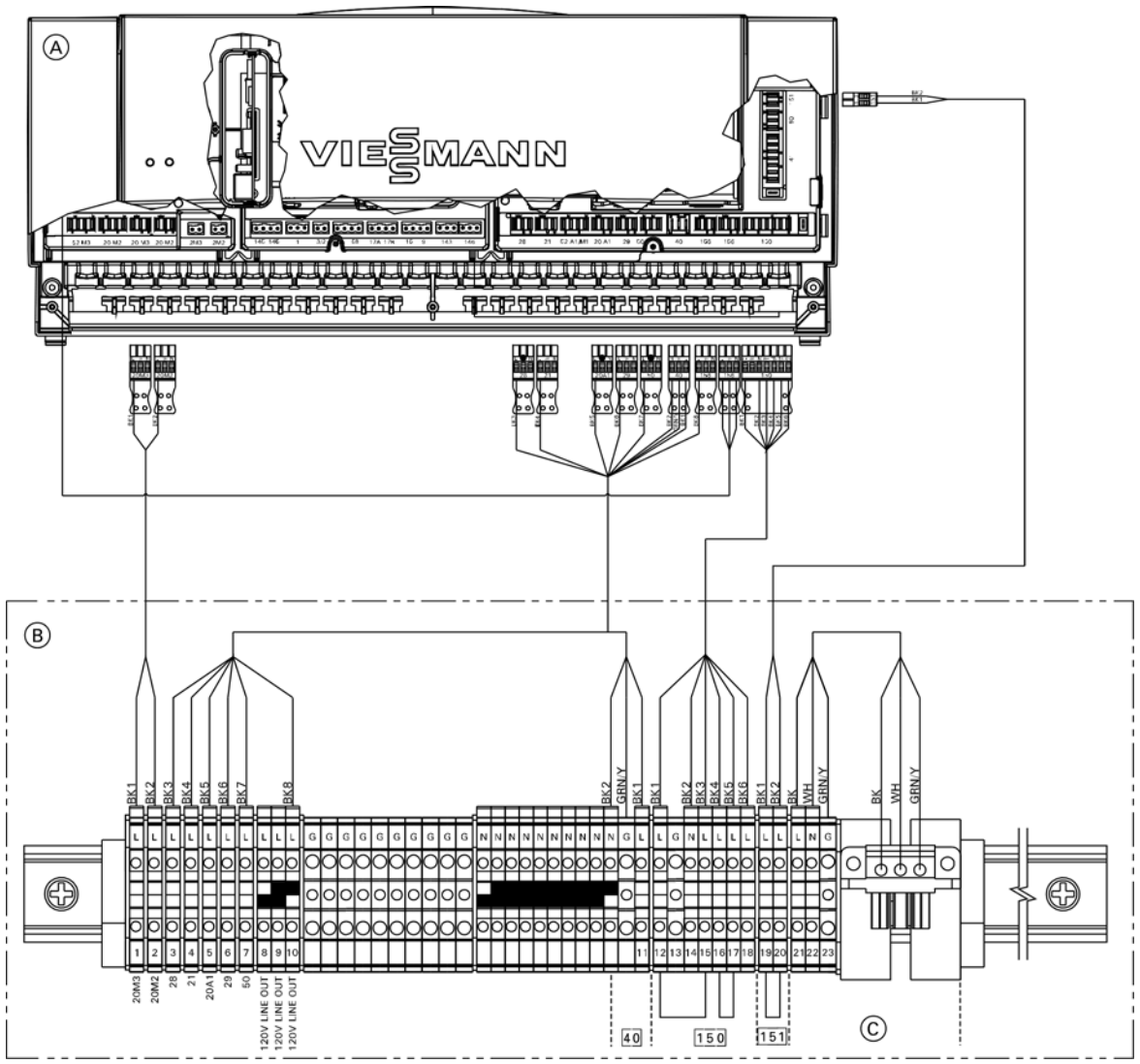
Main PCB, LV

- 1 Outside temperature sensor
- 3/2 Boiler temperature sensor
- 5 A DHW tank temperature sensor
- 5 B DHW tank temperature sensor 2 for primary store system (optional accessory, not used)
- 9 Supply temperature sensor, low loss header (accessory)
- 15 Flue gas temperature sensor (accessory)
- 17 A Therm-Control temperature sensor
  or
  Return temperature sensor T1 (supplied with VD2 and VD2A, accessory for CT3)
- 17 B Return temperature sensor T2 (accessory)
  or
  Temperature sensor primary store system (optional accessory, not used)
- 143 External hook-up
- 145 KM BUS participant (accessory)
- 146 External hook-up

Main PCB 120V~

- 20 A1 Heating circuit pump
  or
  Primary pump, primary store system (not used)
  or
  Circulation pump, flue gas/water heat exchanger (not used)
  or
  Switching output/shunt pump
- 21 DHW pump
- 28 DHW recirculation pump
- 29 Shunt pump or boiler circuit pump
- 40 Power supply
- 41 Burner stage 1
- 50 Central fault message
- 52 A1 Motor for 3-way mixing valve, return temperature control
  or
  Motor for 3-way mixing valve, primary store system (not used)
- 90 Burner stage 2/mod.
- 150 External connections, e.g. supplementary safety equipment
- 151 Safety chain, potential-free
- 156 Power supply connection for accessories

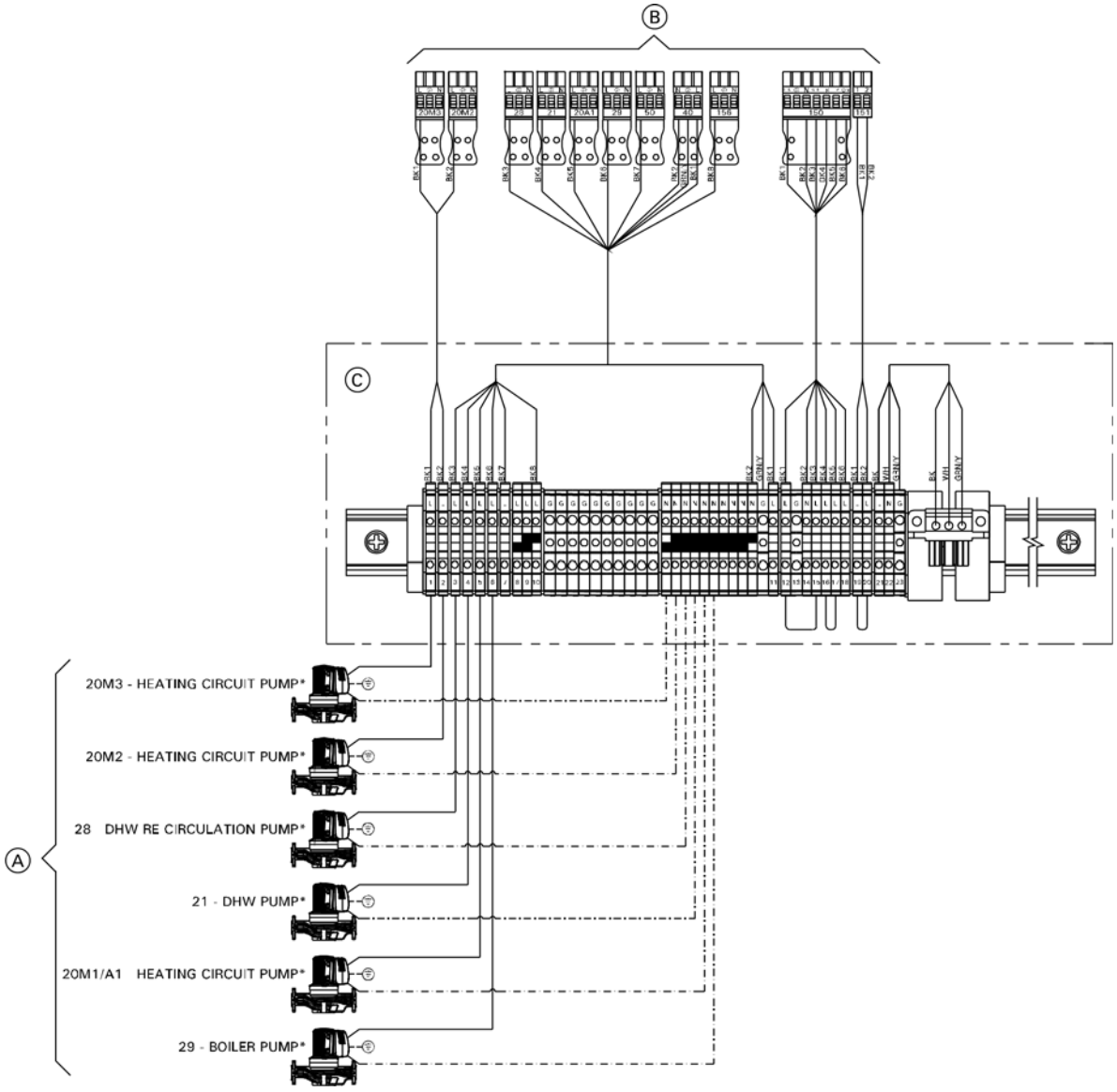
Overview of Electrical Connections *(continued)*



Legend

Ⓐ Vitotronic 300 GW2B
Ⓑ Junction box
Ⓒ Burner motor power supply (refer to page 53)
40 Vitotronic 300 GW2B power supply

Pump Connection Overview



Legend

Ⓐ 120V pump output
Ⓑ To the Vitotronic control unit
Ⓒ Junction box

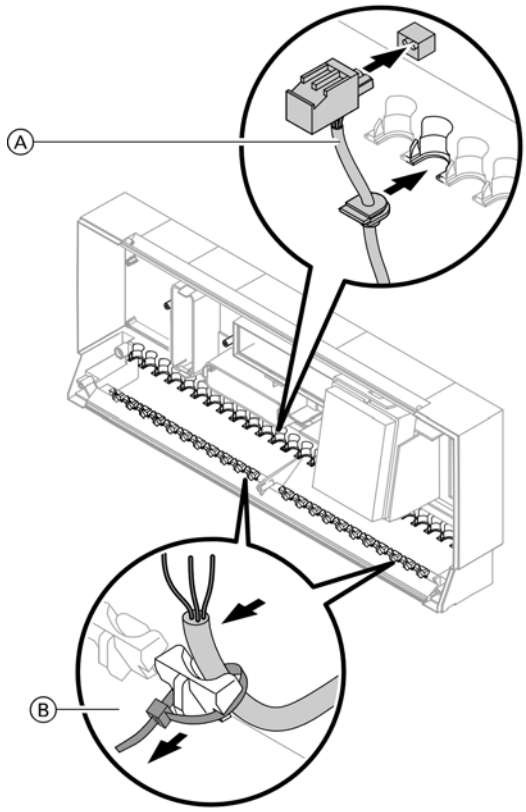
Rated current: 2A ~
* Maximum output 6FLA shared between all 120V outputs.

Pumps 120V

Available pump connections

20 M1/A1	Heat circuit pump (switching contact/shunt pump)
29	Boiler pump (shunt pump)
21	DHW pump
28	DHW recirculation pump
20 M2	Heating circuit M2 pump
20 M3	Heating circuit M3 pump

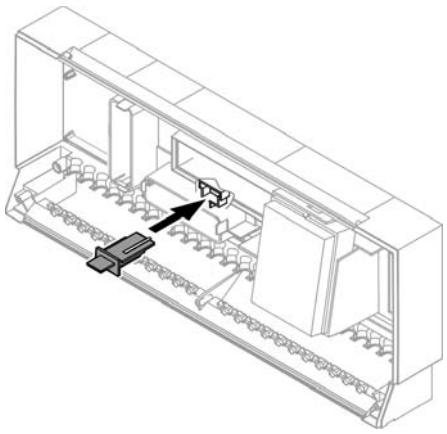
Inserting Cables and Applying Strain Relief



Legend

Ⓐ Cables with moulded strain relief
Ⓑ Restrain cables with zip tie to cable lead

Inserting the Boiler Coding Card

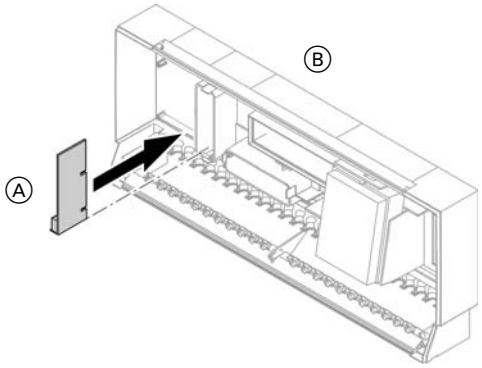


Only use the boiler coding card supplied with the boiler (see table in chapter “Components”).

Insert the boiler coding card into slot “X7”, through the recess in the cover.

Boiler	Coding card	Identification	Spare parts no.
Vitocrossal 300, CT3	1040	7841118	7841118
Vitorond 200, VD2, VD2A	1020	7841111	7841111

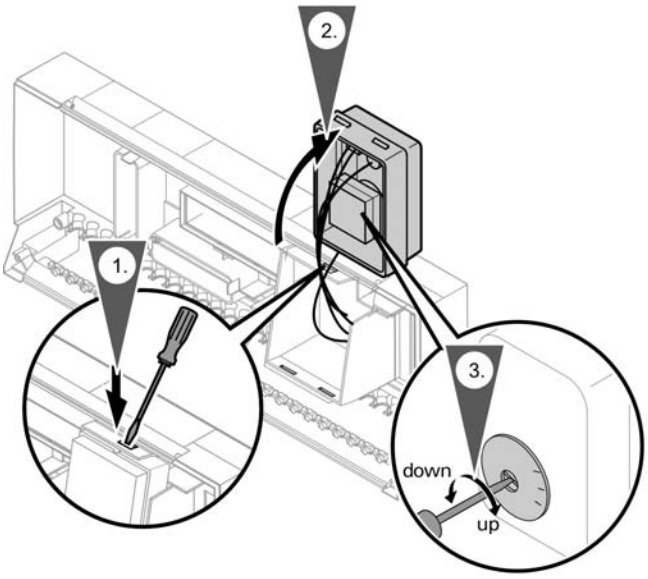
Inserting the LON Communication Module



Making the LON connection, see page 64.

Legend
Ⓐ LON communication module (accessory)
Ⓑ Vitotronic 300 GW2B

Adjusting the Fixed High Limit (if required)



When adjusting the fixed high limit, the adjustable high limit and the electronic temperature limiter must also be adjusted (see chart below).

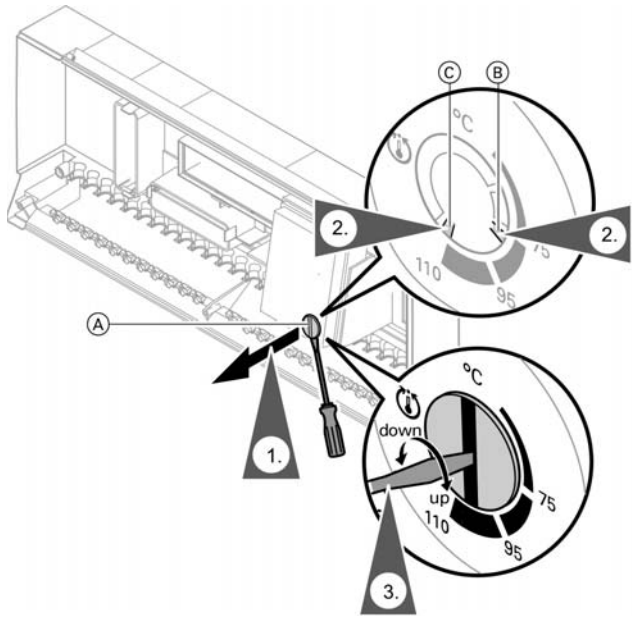
⚠ WARNING

Disconnect power to the control and burner!

1. Unclip the fuse box and swing upwards.
2. Turn the slotted screw on the rear of the fixed high limit until the slot points to the desired temperature).
3. Re-fit the fuse box.

	Non-condensing boiler (VD2/VD2A) °F (°C)			**Condensing boiler (CT3)** °F (°C)
	Factory set at;	Adjustable to;		Factory set at;
Fixed high limit	230°F (110°C)	210°F (99°C)	248°F (120°C)	210°F (99°C)
Adjustable high limit	212°F (100°C)	203°F (95°C)	230°F (110°C)	203°F (95°C)
Coding address for the electronic maximum temperature limit of Vitotronic 100; set coding address 06 (see boiler coding section) to the temperature as shown or less	200°F (93°C)	188°F (87°C)	223°F (106°C)	188°F (87°C)

Changing the Adjustable High Limit (if required)



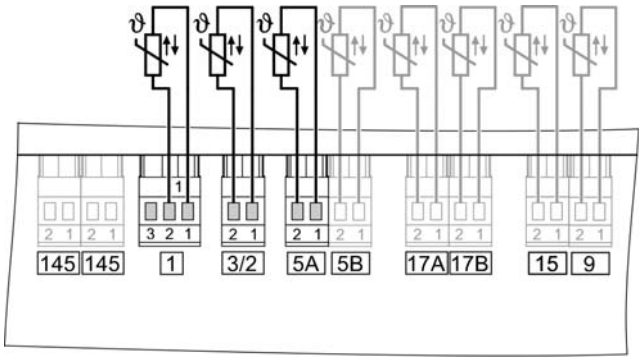
Note: Excessive DHW temperatures can damage the DHW tank. If the system is operated in conjunction with a DHW tank, ensure that the maximum permissible water temperature is not exceeded. If necessary, install suitable safety equipment for this purpose.

1. Remove rotary selector Ⓐ.
2. Using a pair of pointed pliers, break the restraining tab Ⓑ or Ⓒ out of the stop dial as shown.
3. Install rotary selector Ⓐ. Turn rotary selector Ⓐ to the required temperature. The slot should line up to the selected temperature.

Legend

Ⓐ Rotary selector
Ⓑ Break required tab
or
Ⓒ Break required tab

Connecting Sensors



Installation point for outside temperature sensor

- North or north-western wall, 6.5 ft. to 8.2 ft. (2 to 2.5 m) above ground level; in multi storey buildings, in the upper half of the second floor
- Not above windows, doors or ventilation outlets
- Not immediately below balconies or gutters
- Never render over

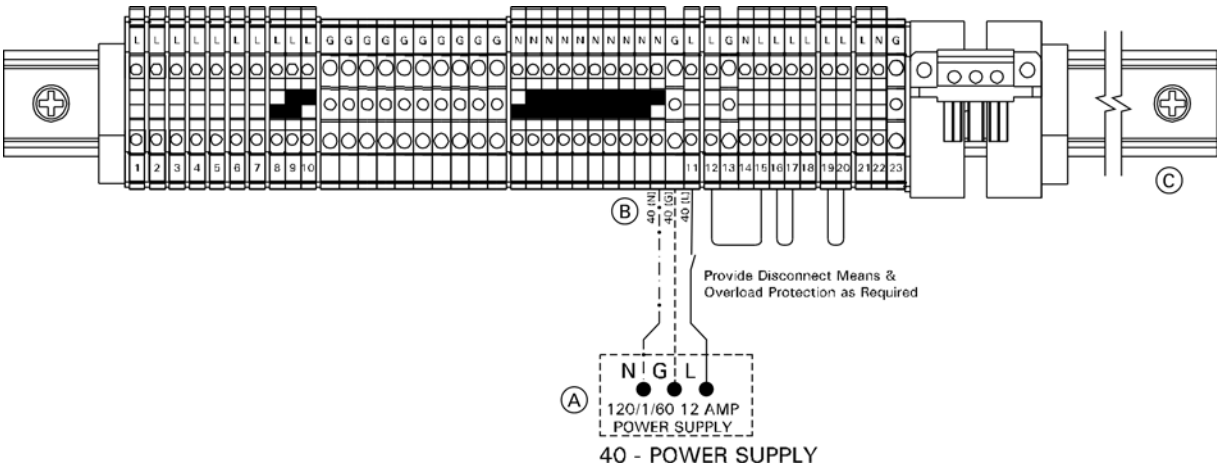
Outside temperature sensor connection

Two wire communication cable 16 AWG (maximum length 95 ft, (30 m).

Legend

1	Outside temperature sensor
3/2	Boiler temperature sensor
5A	DHW tank temperature sensor 1
5B	DHW tank temperature sensor 2 for primary store system (optional accessory, not used)
17A	Therm-Control temperature sensor or Return temperature sensor T1 (supplied with VD2 and VD2A, accessory for CT3)
17B	Return temperature sensor T2 or Temperature sensor primary store system (optional accessory, not used)
15	Flue gas temperature sensor (accessory)
9	Flow temperature sensor, low loss header (accessory)

Power Supply



40 - POWER SUPPLY

Legend
L: Line
N: Neutral
G: Ground

Ⓐ Power supply 120VAC, 1PH, 60Hz, provide disconnect means and overcurrent protection as per local codes

Ⓑ Terminals N, G and 11 (in junction box)

Ⓒ Junction box

1. Ensure that the main power supply to the control contains overcurrent protection with a minimum rating of 15A disconnect.

WARNING

The control must be grounded.
Ensure that "L", "N" and "G" are not interchanged.

2. Connect power supply wire to the connection 40 terminals 11, N and G on the DIN rail inside the junction box.

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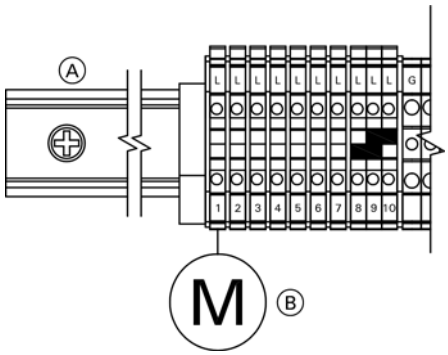
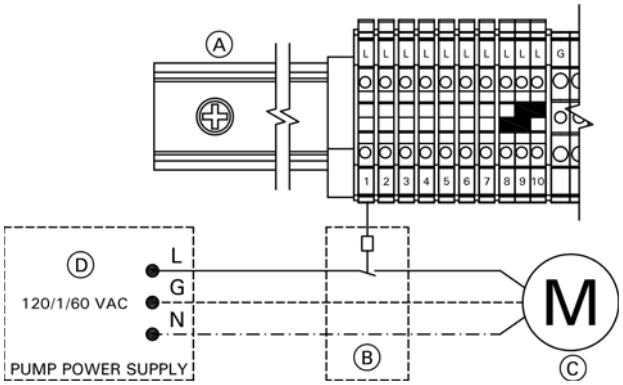
External Connections



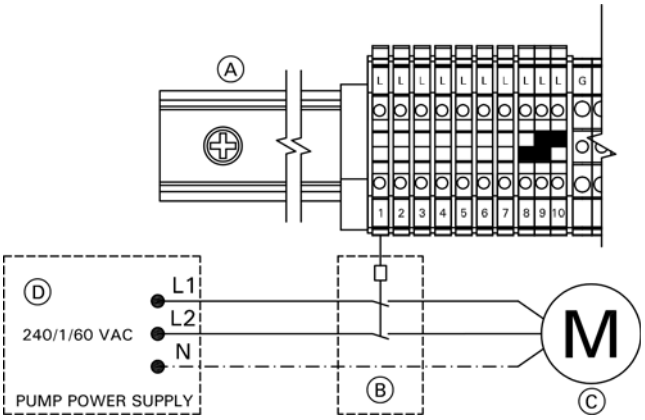
120V pumps with an amperage draw of < 2FLA

Legend
Ⓐ DIN rail
Ⓑ Pump



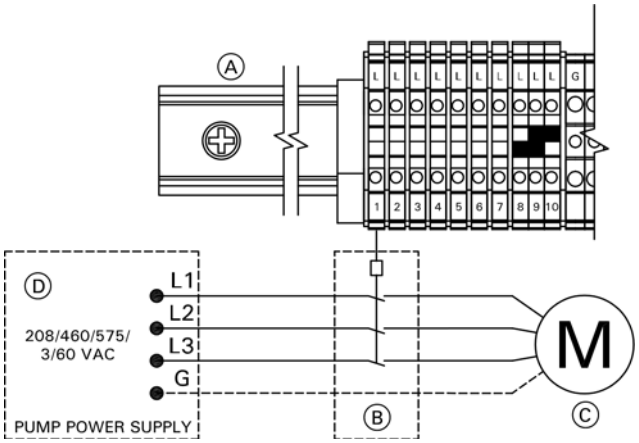
120V pumps with an amperage draw of > 2FLA
Contactor specification 120VAC 1A

Legend
Ⓐ DIN rail
Ⓑ Contactor/relay (field supplied)
Ⓒ Pump
Ⓓ Power supply w/disconnect and protection



240V single phase pumps
Contactor specification 120VAC 1A

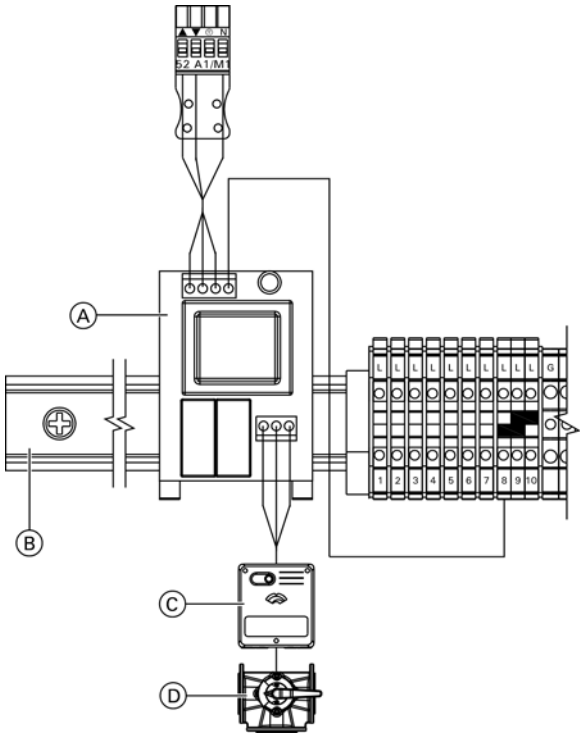
Legend
Ⓐ DIN rail
Ⓑ Contactor/relay (field supplied)
Ⓒ Pump
Ⓓ Power supply w/disconnect and protection



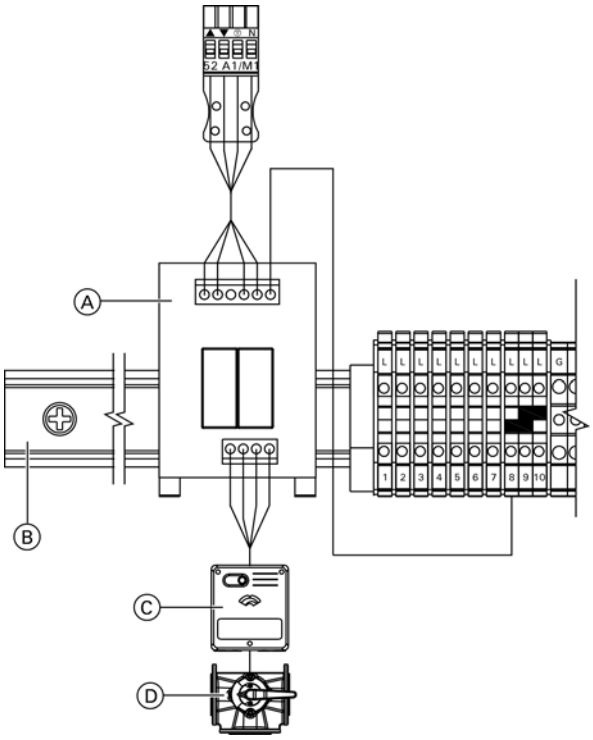
208/460/575V 3 phase pumps
Contactor specification 120VAC 1A

Legend
Ⓐ DIN rail
Ⓑ Contactor/relay (field supplied)
Ⓒ Pump
Ⓓ Power supply w/disconnect and protection

Connecting Actuators



Legend
Ⓐ 24V Mixing Valve Adaptor
Ⓑ DIN Rail (in junction box)
Ⓒ 24V Valve Actuator
Ⓓ Valve



Legend
Ⓐ 120V Mixing Valve Adaptor
Ⓑ DIN Rail (in junction box)
Ⓒ 24V Valve Actuator
Ⓓ Valve

120V Valve Adaptor

Rated voltage:	120VAC
Rated current:	max. 0.1 FLA
Recommended connection wire size:	AWG 14

24V Valve Adaptor

Rated voltage:	24VAC
Rated current:	max. 0.15 FLA
Recommended connection wire size:	AWG 14

Operating time: 5 to 199 sec. selected via coding address “40”.

Available connections

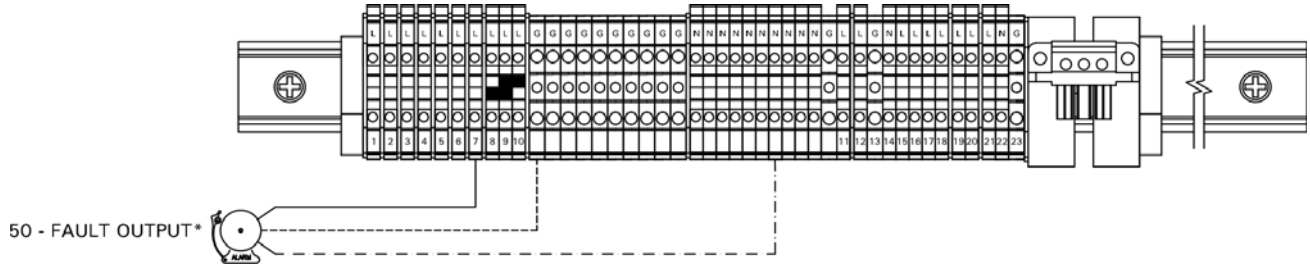
52 A1 Motor for 3-way mixing valve, primary store system
52 M2 For heating circuit 2
52 M3 For heating circuit 3

Rated voltage:	120V~
Rated current Max.:	0.1A~
Motor runtime for 3-way mixing valve:	10 to 255 sec, adjustable via coding addresses “6A” in the”DHW”group, “C3” in the HC2 group and “C3” in the HC3 group.

1. Disconnect power to control.
2. Install 120V or 24V valve adaptor on DIN rail inside connection enclosure.
3. Insert the plug 52 into socket 52 on the control.
4. Fasten cable with tie.
5. Connect black wire of the adaptor to terminals 8,9 or 10 on the Din rail.
6. Connect valve actuator wires to the adaptor terminals

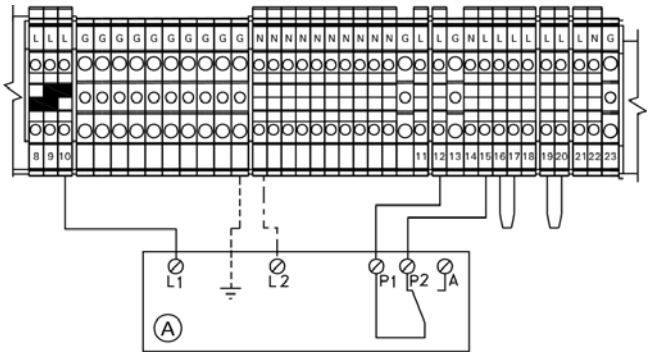
Refer to the mixing valve adaptor Installation Instructions for additional information.

Connecting the Central Fault Message Facility



Rated voltage: 120V~
Rated current: max. 2A~

Connection of Low Water Cut-off Device 150



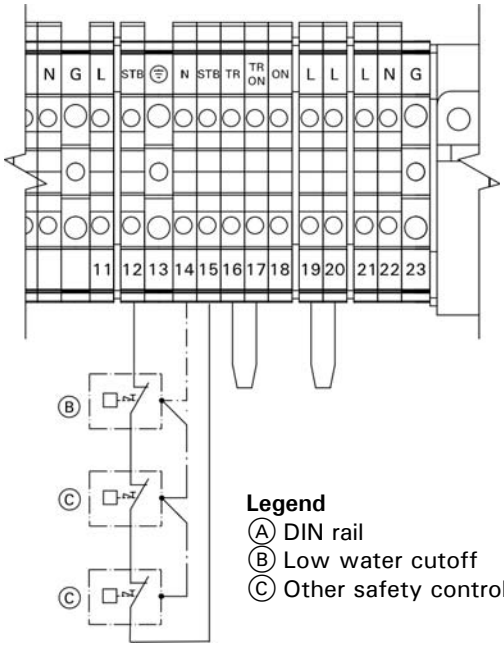
1. Remove jumper between terminals 12 and 15.
2. Make connection as shown in diagram.

CAUTION

The diagram shown is only a simplified conceptual drawing of a typical low water cut off (LWCO) device. Refer to the manual specific to the device for interconnection details.

Legend
156 Power supply for accessories.
150 Connection for external equipment.
Ⓐ Low water cut-off (typical)

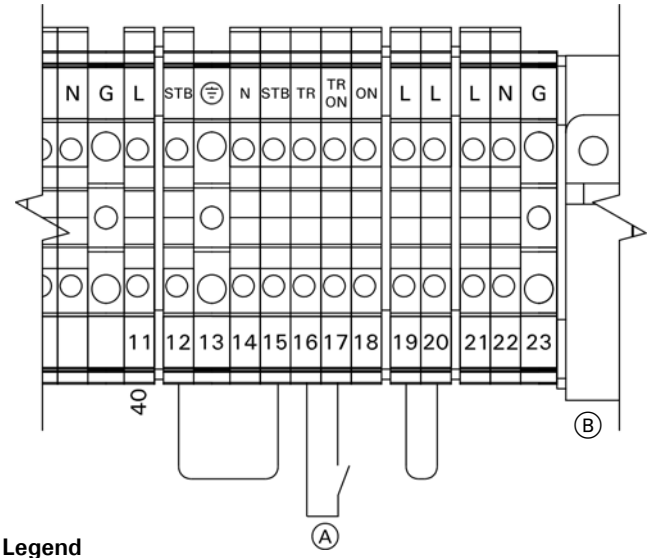
Connections to Safety Equipment 150



1. Connect the external safety equipment in series.

Legend
Ⓐ DIN rail
Ⓑ Low water cutoff
Ⓒ Other safety controls

External Burner Blocking 150



Legend
Ⓐ Dry contact
Ⓑ DIN rail

Note: 'Live' contacts lead to short circuits or phase failure. The external connection must be floating.

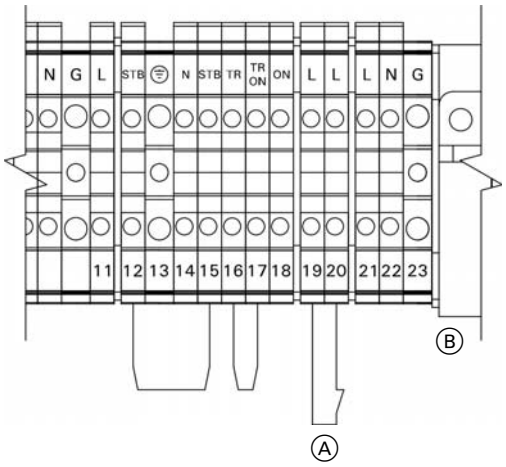
Remove jumper from DIN terminals 16 and 17.

Note: Connect only safety shutdown equipment (dry contact), e.g. a combustion air device adaptor, to these terminals.

Opening this contact leads to a burner control shutdown.

Note: The heating system has no frost protection during blocking. The boiler is not held at the lower boiler water temperature.

Connections to Terminal 151



Legend
Ⓐ Dry contact
Ⓑ DIN rail

External shut-off

1. Remove jumper between terminals 19 and 20.
2. Connect dry contact. Controlled switch-off takes place when the contact is opened.

WARNING

The terminals should be used for safety switch-off purposes only (e.g. through a high limit thermostat). During switch-off, there is no frost protection of the heating system and the boiler is not kept at the minimum boiler water temperature.

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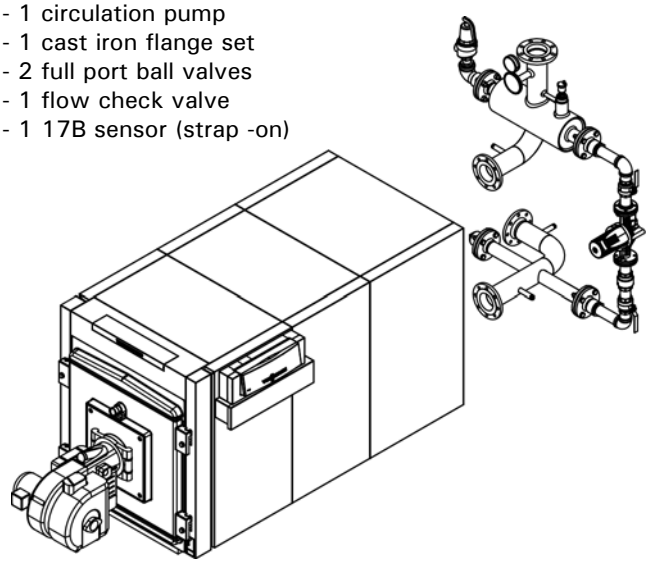
Vitotronic 100, GC1 with 30% LTP Package (VD2 only)

30% LTP Package consists of:
- 1 circulation pump
- 1 cast iron flange set
- 2 full port ball valves
- 1 flow check valve
- 1 17B sensor (strap -on)



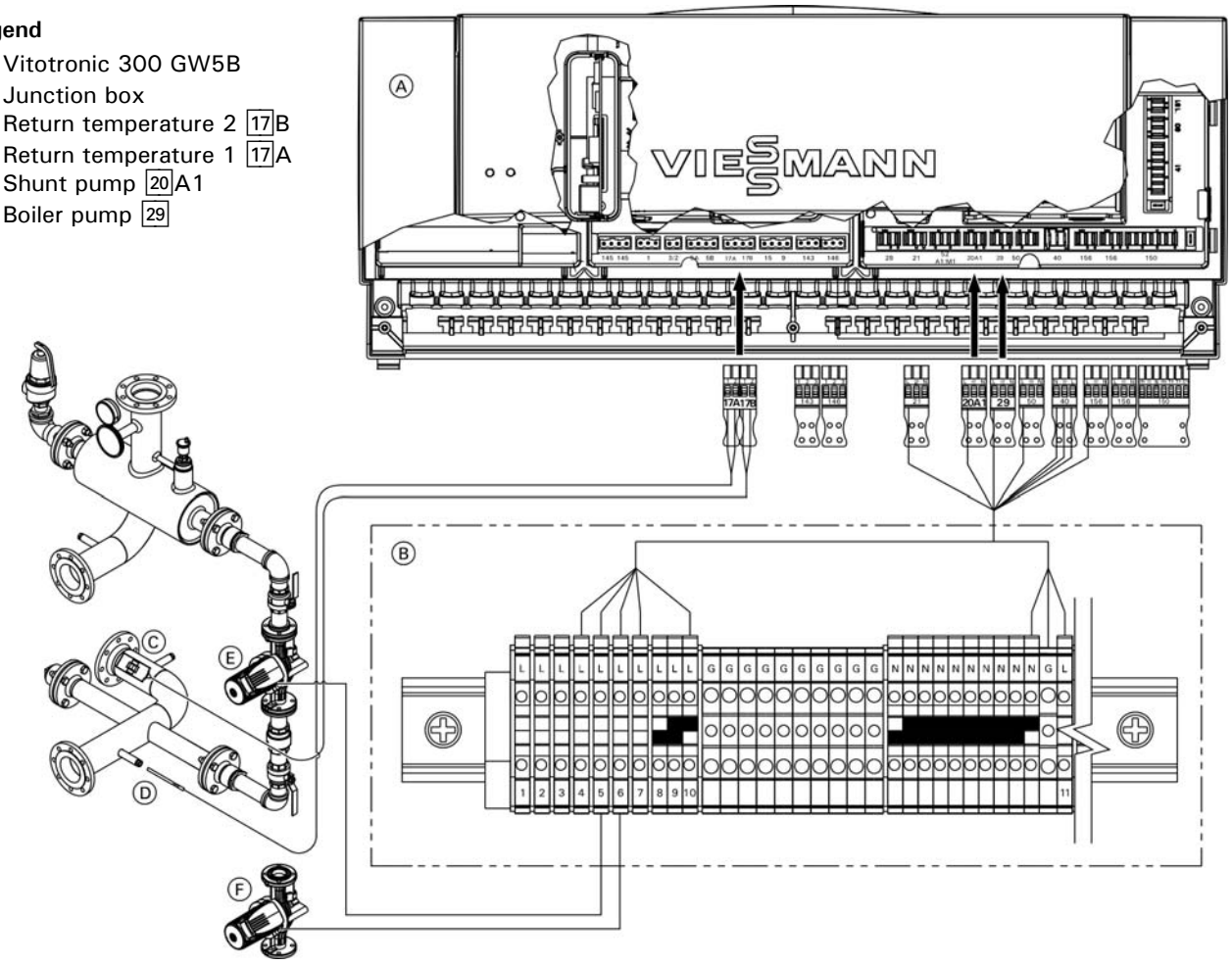
Each pump output: 120V single phase
Max. pump current: 2 FLA

IMPORTANT

Pump current larger than 2 FLA will require a contactor or isolation relay (see page 41).

Mandatory Coding Address Changes
0C:5 - Modulating isolation valve
(independant of boiler water temperature).
0d:2 - Switching contact
4A:1 - 17A Sensor installed
4b:1 - 17B Sensor installed
4C:2 - Connections at plug 20A1
Therm control switch contact
4d:2 - Boiler circuit pump

Legend
Ⓐ Vitotronic 300 GW5B
Ⓑ Junction box
Ⓒ Return temperature 2 17B
Ⓓ Return temperature 1 17A
Ⓔ Shunt pump 20A1
Ⓕ Boiler pump 29



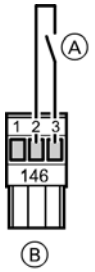
External Demand via Switching Contact

Connection

Note: 'Live' contacts lead to short circuits or phase failure. The external connection must be floating.

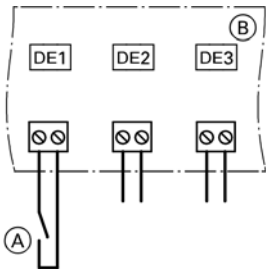
Optional Connections:
- Plug 146
- Extension EA1 (accessory, see page 127)

Plug 146



Legend
Ⓐ Floating contact
Ⓑ Plug 146 of the control unit

Extension EA1



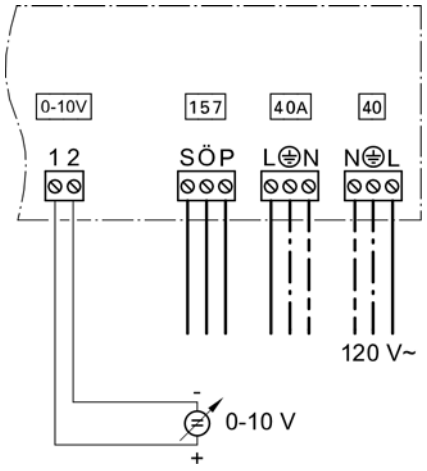
Legend
Ⓐ Floating contact
Ⓑ Extension EA1

When the contact is closed, the burner is operated subject to load. The boiler water is heated to the value set in the coding address "9b" in the "General" group.
The boiler water temperature is limited by this set value and the electronic maximum limit (coding address "06" in the "Boiler" group).

Codes

Plug 146	Extension EA1
No code required.	Set "5d", "5E" or "5F" in the "General" group to 2.

External Demand via 0 – 10V Input



Connection to input 0 – 10V at extension EA1 (see page 127).

Ensure DC separation between the negative pole and the ground conductor of the on-site voltage source.

0 - 1V ≙ No default set boiler water temperature
1V ≙ set value 50°F (10°C)
10V ≙ set value 212°F (100°C)

Observe coding address "1E" in the "General" group.

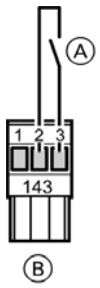
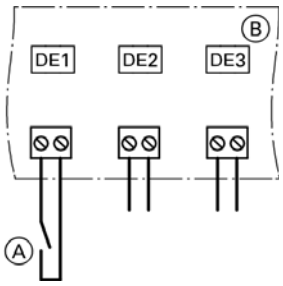
Optional temperature range from 86 to 248°F (30 to 120°C):
0 - 1V ≙ no default set supply temperature
1V ≙ 86°F (30°C)
10V ≙ 248°F (120°C)

External Blocking via Switching Contact

Connection

Note: 'Live' contacts lead to short circuits or phase failure. The external connection must be floating.

Optional connections:
- Plug 150 (See page 44)
- Plug 143
- Extension EA1 (accessory, see page 127)

Plug 143	**Extension EA1**
	
Legend Ⓐ Floating contact Ⓑ Plug 143 of the control unit	**Legend** Ⓐ Floating contact Ⓑ Extension EA1
Closing this contact leads to a controlled burner shutdown. Any connected shunt or boiler circuit pump is stopped.	

Note: The heating system has no frost protection during blocking.
The boilers are not held at the lower boiler water temperature.

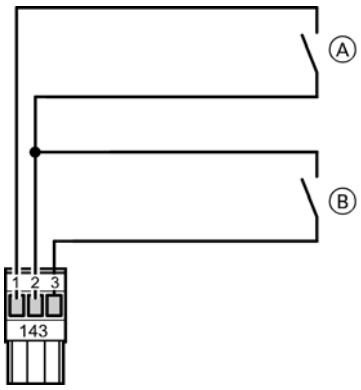
Codes

Plug 143	**Extension EA1**
Set coding address "99" in the "General" group.	Set "5d", "5E" or "5F" in the "General" group to 3 or 4.

External “Mixing Valve Closed”/”Mixing Valve Open”

Connection at plug 143.

Note: ‘Live’ contacts lead to short circuits or phase failure. The external connection must be floating.



Legend
Ⓐ External “Mixing valve open” (floating contact)
Ⓑ External “Mixing valve closed” (floating contact)

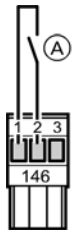
Codes

External “Mixing valve open”	External “Mixing valve closed”
This function is assigned to the heating circuits via coding address “9A” in the “General” group.	This function is assigned to the heating circuits via coding address “99” in the “General” group.

External Changeover of Multi Stage/Modulating Burners

Connection via plug 146.

Note: ‘Live’ contacts lead to short circuits or phase failure. The external connection must be floating.



Legend
Ⓐ External changeover (floating contact)

Code
Set code “02:2” in group 2 “Boiler”.

Contact open: modulating mode
Contact closed: two stage mode

Note: When scanning the burner version, the address for modulation appears even after an external changeover (no rewriting).

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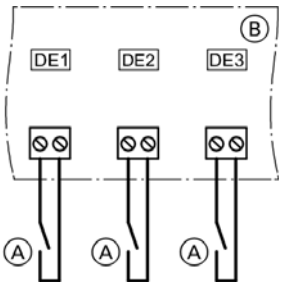
External Heating Program Changeover

Connection

Note: 'Live' contacts lead to short circuits or phase failure. The external connection must be floating.

Optional Connections:

- Plug 143
- Extension EA1 (accessory, see page 127)

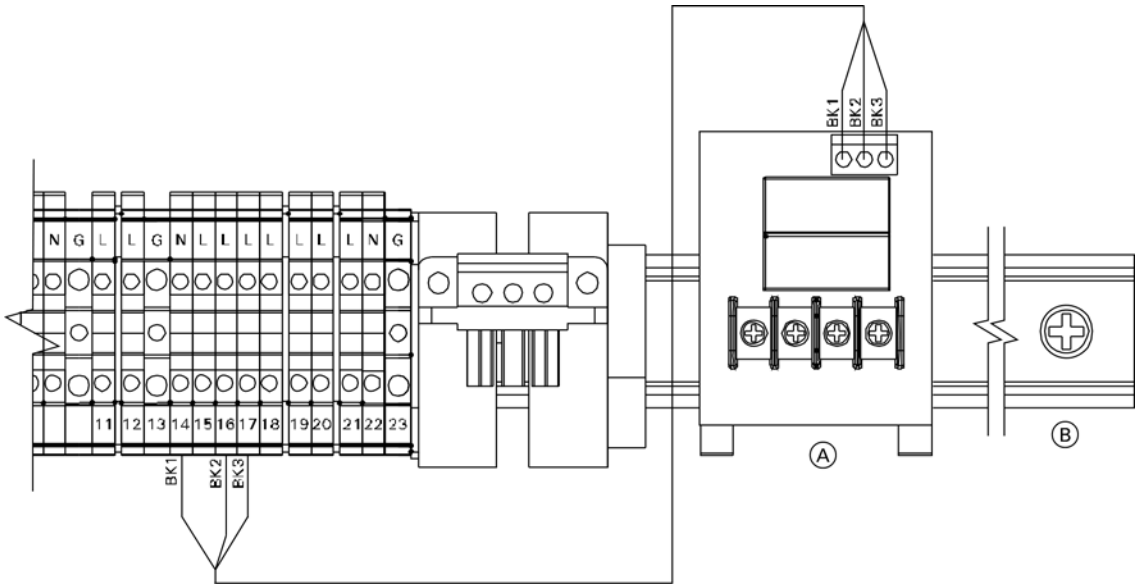
Plug 143	Extension EA1
	The changeover can be achieved separately for heating circuits 1 to 3. 
Legend Ⓐ Floating contact Ⓑ Plug 143 of the control unit	**Legend** Ⓐ Floating contact Ⓑ Extension EA1

Preselected heating program (Contact open)		Code		Changed heating program (Contact closed)
⏻	Central heating OFF/ DHW OFF	"d5:0" in the "Heating circuit..." group (Factory set condition)	⇔	Constant operation with reduced room temperature/DHW heating OFF
or 🚿	Central heating OFF/ DHW heating ON	"d5:1" in the "Heating circuit ..."group	⇔	Constant operation with standard room temperature, DHW heating in accordance with coding address "64" in the "DHW" group
or 🔥🚿	Central heating ON/ DHW heating ON			

Codes

Plug 143	Extension EA1
Via coding address "91" in the "General" group, the function can be assigned to the heating circuits.	Set "5d", "5E" or "5F" in the "General" group to 1. Via coding address "d8" in the "Heating circuit..." group, the function can be assigned to the heating circuits.

Connection of Combustion Air Device



Legend

Ⓐ Combustion Air Device Adaptor
Ⓑ DIN Rail in connection enclosure

Connection of the Combustion Air Device Adaptor

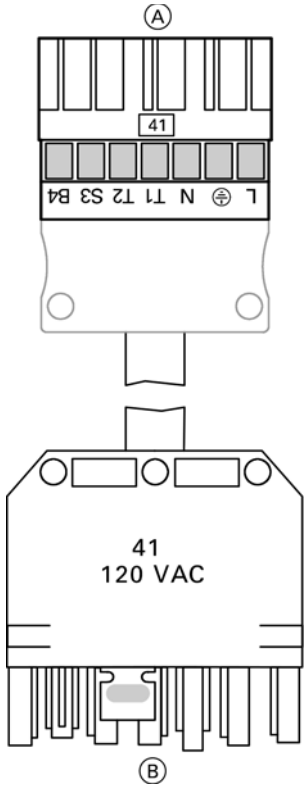
1. Disconnect power to control and burners.
2. Install Combustion Air Device Adaptor, on DIN Rail inside connection enclosure (refer to installation manual of Combustion Air Device Adaptor).
3. Remove jumper between terminals 16 and 17.
4. Make connection as shown in the diagram.

IMPORTANT

Wire BK2 must be connected to terminal 16 and BK3 to terminal 17 - DO NOT reverse.

For more detail, refer to the combustion air device Installation Instructions.

Burner Connection, Burner Control Wiring



Legend
Ⓐ To boiler control unit
Ⓑ To burner

For burners with plug-in connection

The burner cables are included in the standard delivery of the Vitotronic. Connect the burner in accordance with applicable codes.

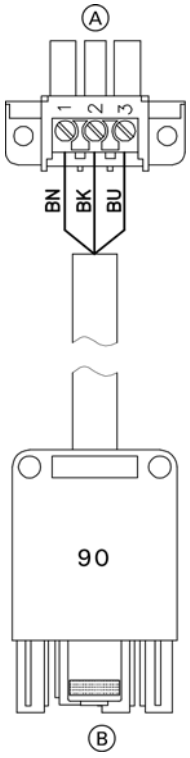
Terminal codes

L	Phase via fixed high limit to the burner
⏚	Ground connection
N	Neutral connection to the burner
T1,T2	Control circuit
S3	Connection for burner fault indicator
B4	Connection for burner hours counter

1. Disconnect power to burner and boiler control.
2. Connect plugs 41 and plug 90 to respective counter plugs in boiler control unit.
3. Connect the 7-pole plug 41 and the 3-pole plug 90 to the burner.

CAUTION

This is a generic connection drawing only!
Follow the burner manufacturer's connection drawings for Viessmann controls.



Legend
Ⓐ To plug-in connection in the Vitotronic boiler control junction box
Ⓑ To burner

Terminal codes

1,2,3	Control circuit "2nd stage burner or modulation controller" (via two-point controller with 2-stage operation; via three-point controller with modulating operation)
1	From burner
2	Modulating down
3	Modulating up/2nd stage ON

Color codes as applicable
BK Black
BN Brown
BU Blue

Burner Connection, Burner Control Wiring *(continued)*

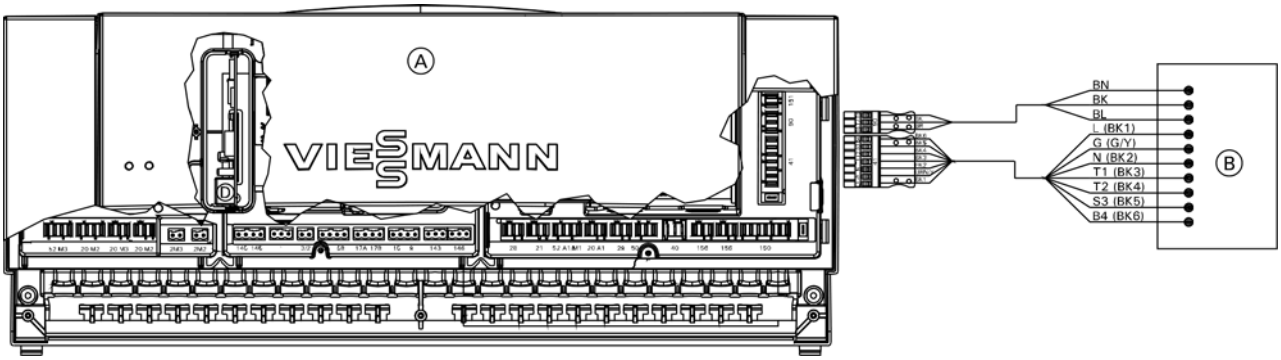
CAUTION

This is a generic connection drawing only!
Follow the burner manufacturer's connection drawings for Viessmann controls.

For burner without plug-in connection
The burner cables are included in the standard delivery of the Vitotronic. Connect the burner in accordance with applicable codes.

Note: Write the terminal numbers or markings on the drawing for future reference.

Refer to burner manufacturer's instruction on detailed connections for Viessmann controls.

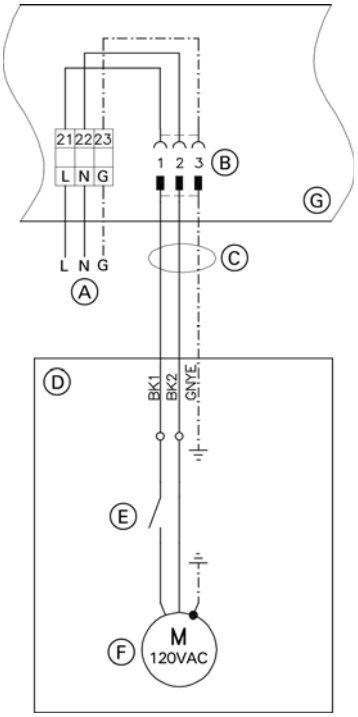


Legend

Ⓐ Vitotronic 300 GW2B
Ⓑ Burner
41 Burner, 1st stage
90 Burner, 2nd stage/modulation

Note: 41 and 90 cables are pre-routed through the junction box.

Burner Connection, Motor Power Supply



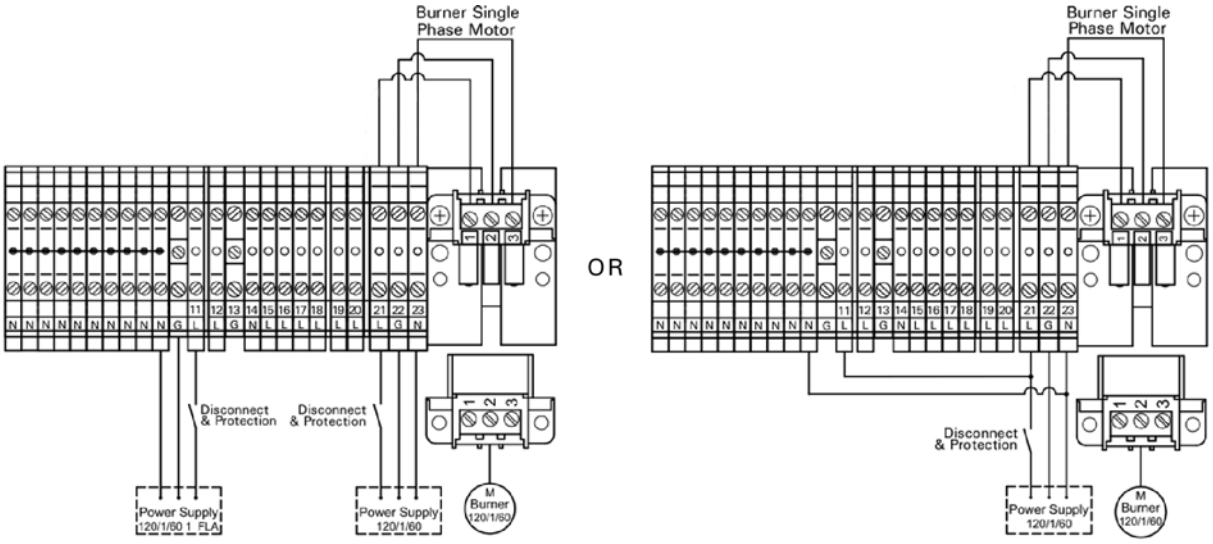
Legend

Ⓐ Burner motor power supply 120VAC, 1PH
Ⓑ Connection terminals and plug inside connection enclosure
Ⓒ Cable and conduit- factory supplied
Ⓓ Burner
Ⓔ Motor starter
Ⓕ Burner motor
Ⓖ Connection enclosure on boiler control

CAUTION

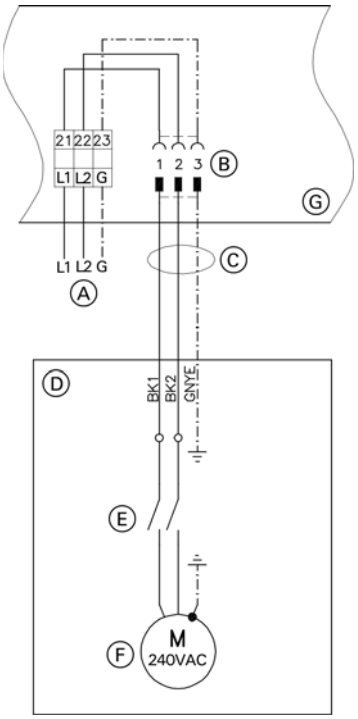
The control must be grounded. Ensure that "L", "N" and "G" are not interchanged.

1. Ensure that the main power supply to the control contains overcurrent protection with a maximum rating of 15A and 2 pole disconnect.
2. Connect power supply wire to the Connection 40 terminals 11, N and G on the DIN rail inside the connection enclosure.



Supply power must be sufficient to cover both the 12A control plus the required motor amperage.

Burner Connection, Motor Power Supply *(continued)*



Legend

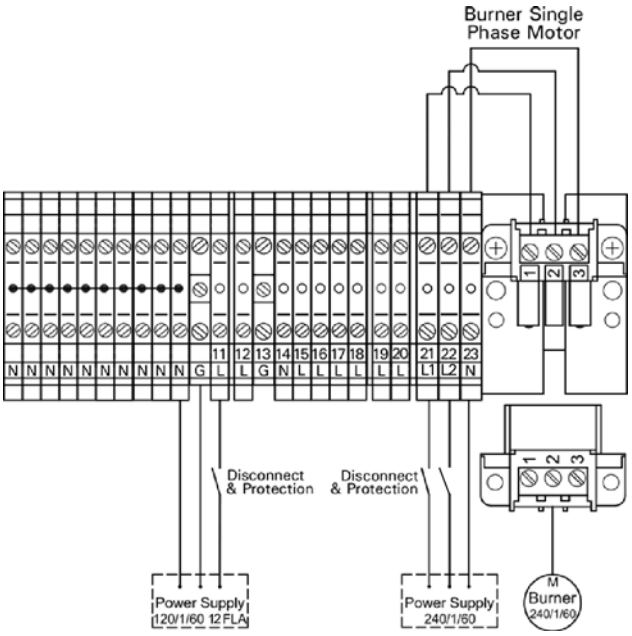
Ⓐ Burner motor power supply 240VAC, 1PH
Ⓑ Connection terminals and plug inside connection enclosure
Ⓒ Cable and conduit- factory supplied
Ⓓ Burner
Ⓔ Motor starter
Ⓕ Burner motor
Ⓖ Connection enclosure on boiler control

Burner motor power supply connection

For burners with 240VAC, 1PH power supply and connection in conduit.

See burner manual for correct fuse and wire gauge sizing, and specific connections for Viessmann controls.

1. Disconnect power to burner and boiler control.
2. Connect 240VAC power to the terminals 21, 22 and 23 on the DIN rail inside the connection enclosure. Provide fuseable disconnect means according to local codes.
3. Connect supplied power cable to the motor terminals on the burner.
4. Connect cable plug to the socket on the DIN rail in the connection enclosure.


Burner Single Phase Motor
N N N N N N N N N G L 11 12 13 14 15 16 17 18 19 20 21 22 23
L L G N L L L L L L L1 L2 N
1 2 3
Disconnect & Protection
Disconnect & Protection
Power Supply 120/1/60 12 FLA
Power Supply 240/1/60
M
Burner 240/1/60

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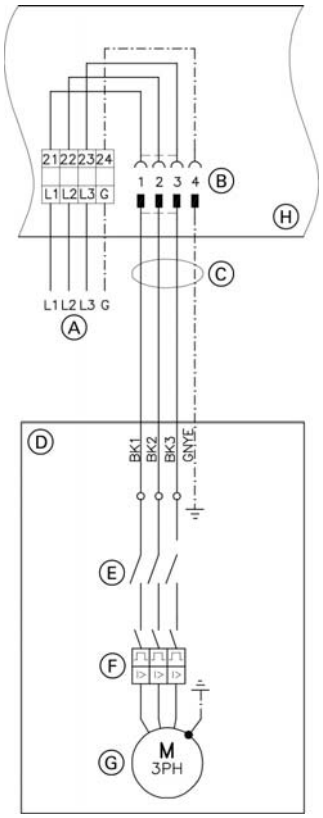
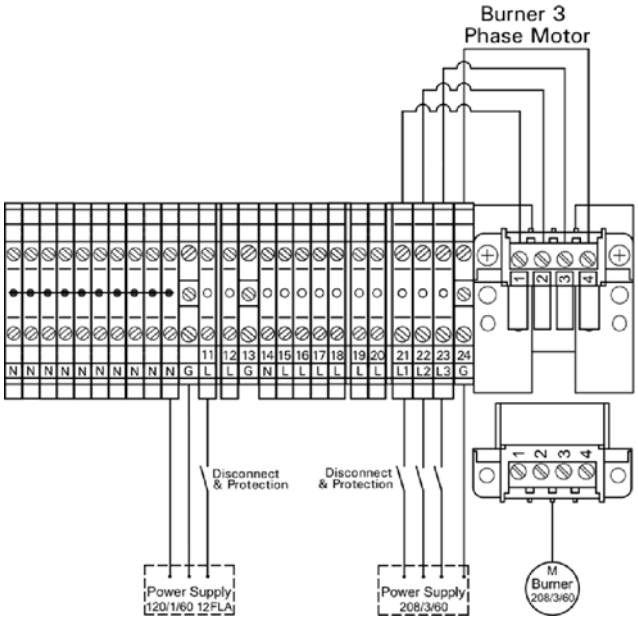
Burner Connection, Motor Power Supply *(continued)*



Legend

Ⓐ Burner motor power supply 3PH 208, 460 or 575V
Ⓑ Connection terminals and plug inside connection enclosure
Ⓒ Cable and conduit- factory supplied
Ⓓ Burner
Ⓔ Motor starter
Ⓕ Overload
Ⓖ Burner motor
Ⓗ Boiler junction box



Burner motor power supply connection (continued)
For burners with 3PH 208, 460 or 575V power supply.

CAUTION

During commissioning check for correct motor rotation. If motor rotates in opposite direction than indicated on the burner, disconnect power supply and reverse wires BK1 and BK2 on the burner terminals.

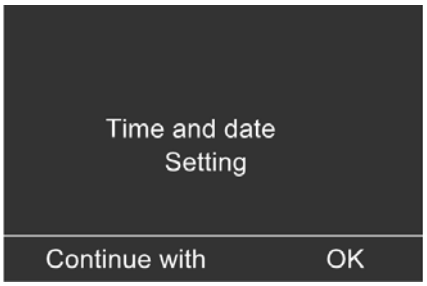
See burner manual for correct fuse and wire gauge sizing, and specific connections for Viessmann controls.

1. Disconnect power to burner and boiler control.
2. Connect 3PH power to the terminals 21, 22, 23 and 24 on the DIN rail inside the connection enclosure. Provide fuseableb disconnect means according to local codes.
3. Connect supplied power cable to the motor terminals on the burner.
4. Connect cable plug to the socket on the DIN rail in the connection enclosure.

Changing the Language

The following is displayed during commissioning (factory set German).

Setting the Date and Time



The time and date need to be reset during commissioning or after prolonged time out of use.

Testing the High Limit Safety Cut-out

The minimum circulation volume should be 10% of the circulation volume at rated load.
Reduce the heat consumption as far as possible.

1. Hold down the “TEST” key until the burner has shut down:
   Thermostat is bridged. The high limit safety cut-out must shut down the burner at the latest when the safety temperature has been reached.
2. Release the “TEST” key.
3. Wait until the boiler water temperature has dropped approx. 15 to 20 K below the selected safety temperature.
4. Reset the high limit safety cut-out by pressing reset button.

Refer to the Operating Instructions

Matching the Coding Addresses to the System Version

Check all addresses in Code 1 and adjust if required.

Check the following coding addresses and adjust accordingly in Code 2:

	Group	Function
"0C"	"Boiler"	Return temperature control
"0d"	"Boiler"	Therm-Control
"4C"	"General"	Function plug [20]
"4d"	"General"	Function plug [29]
"4E"	"General"	Function plug [52]
"98"	"General"	Viessmann system number
"9C"	"General"	Monitoring LON participants

Matching the control unit to a two-stage burner

Matching coding addresses according to the burner used

Address	Meaning	Setting
03:...	Fuel	Gas operation: 0 (factory set condition) Oil operation: 1 (irreversible)
08:...	Units and tens of the maximum burner output	Example: Max. burner output: 225 kW – select: 25 **Note:** Values up to and including 199 kW can be entered directly.
09:...	Hundreds of the maximum burner output	Example: Max. burner output: 225 kW – select: 2
0A:...	Ratio of output base load to maximum burner output in percent	Example: Output burner stage 1 135 kW Max. burner output: 225 kW (135 kW : 225 kW) · 100% = 60%

Matching the Coding Addresses to the System Version *(continued)*

Matching the control unit to a modulating burner

Note: The burner must be fully adjusted. To achieve a wide modulating range, set the minimum output as low as possible (take the chimney and flue system into account).

Matching coding addresses according to the burner used

Address	Meaning	Setting
03:...	Fuel	Gas operation: 0 (factory set condition) Oil operation: 1 (irreversible)
08:...	Units and tens of the maximum burner output	Example: Max. burner output: 225 kW – select: 25 **Note:** Values up to and including 199 kW can be entered directly.
09:...	Hundreds of the maximum burner output	Example: Max. burner output: 225 kW – select: 2
15:...	Modulation range runtime	Calculate runtime (s) of servomotor between base load and max. burner output
0A:...	Ratio of output base load to maximum burner output in percent	Example: Base load output: 72 kW Max. burner output: 225 kW (72 kW: 225 kW) · 100% = 32%
05:...	Ratio of partial output at ½ of the servomotor runtime to maximum burner output in percent	Example: Partial output 171 kW Max. burner output: 225 kW (171 kW : 225 kW) · 100% = 76%

Checking Actuators and Sensors

Testing relays

1. Press **OK** and ☰ simultaneously for approx. 4 sec.
2. "Actuator test"

The following actuators (relay outputs) can be controlled subject to the system equipment level:

Display		Explanation
"All actuators"	OFF	All actuators have been switched off.
"Base load"	ON	Mod. burner operates at min. output.
"Burner"	ON	Burner stages 1 is switched on.

Checking Actuators and Sensors *(continued)*

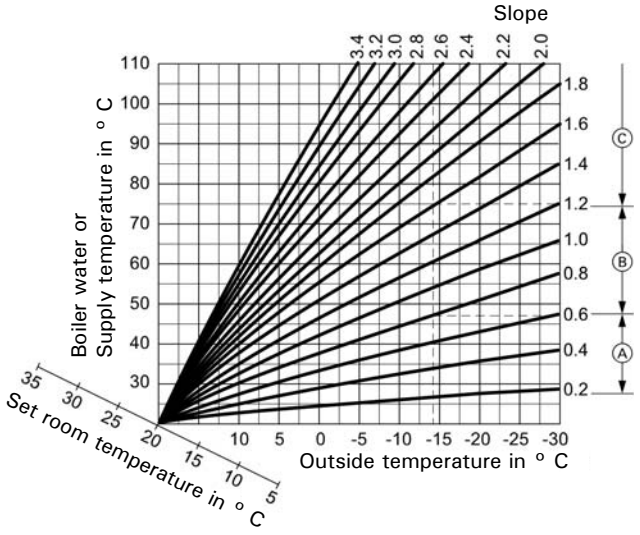
Display		Explanation
"Burner stage 1"	ON	Burner stage 1 is switched on.
"Full load"	ON	Mod. burner operates at max. output.
"Burner stage 1 + 2"	ON	Burner stages 1 and 2 are switched ON.
"Burner modulation"	Open	Modulating burner.
"Burner modulation"	Neutral	Modulating burner.
"Burner modulation"	Closed	Modulating burner.
"Output 20"	ON	Output 20 enabled.
"Output 52"	Open	-
"Output 52"	Neutral	-
"Output 52"	Closed	-
"DHW tank prim pump"	ON	Output for circulation pump for DHW tank heating enabled.
"DHW circ pump"	ON	Output for DHW recirculation pump enabled.
"Output 29"	ON	Output 29 enabled.-
"Central fault mess."	ON	-
"Htg circ pump HC2"	ON	Output for heating circuit pump enabled (heating circuit with mixing valve M2).
"Mixing valve HC2"	Open	Output "Mixing valve open" enabled (heating circuit with mixing valve M2).
"Mixing valve HC2"	Closed	Output "Mixing valve closed" enabled (heating circuit with mixing valve M2).
"Htg circ pump HC3"	ON	Output for heating circuit pump enabled (heating circuit with mixing valve M3).
"Mixing valve HC3"	Open	Output "Mixing valve open" enabled (heating circuit with mixing valve M3).
"Mixing valve HC3"	Closed	Output "Mixing valve open" enabled (heating circuit with mixing valve M3).
"EA1 output 1"	ON	Contact" P - S" on plug [157] for extension EA1 closed.
"AM1 output 1"	ON	Output enabled.
"AM1 output 2"	ON	Output enabled.
"Solar circuit pump"	ON	Output for solar circuit pump [24] at solar control module, type SM1 enabled.
"Solar circ pump min"	ON	Output for solar circuit pump [24] at solar control module, type SM1, switched to minimum speed.
"Solar circ pump max"	ON	Output for solar circuit pump [24] at solar control module, type SM1, switched to maximum speed.
"SM1 output 22"	ON	Output [22] at solar control module, type SM1, enabled.

Note: During burner operation, the pumps connected to the control unit are started.

Checking sensors

1. Press **OK** and ☰ simultaneously for approx. 4 sec.
2. "Diagnosis"
3. Select group (see page 65).
4. Scan actual temperature of the relevant sensor.

Adjusting Heating Curves



Example:

For outside temperature 7°F (−14°C):

Legend

Ⓐ Underfloor heating system, slope 0.2 to 0.8
Ⓑ Low temperature heating system, slope 0.8 to 1.6
Ⓒ Heating system with a boiler water temperature in excess of 167°F (75°C), slope 1.6 to 2.0

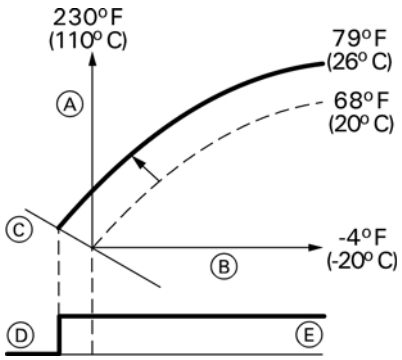
Settings in the factory set condition:

- Slope = 1.4
- Shift = 0

The heating curves illustrate the relationship between the outside temperature and the boiler water or supply temperature.

To put it simply: The lower the outside temperature, the higher the boiler water or supply temperature. The room temperature, again, depends on the boiler water or the supply temperature.

Adjusting Heating Curves *(continued)*



Standard set room temperature

Changing the standard room temperature from 68°F to 79°F (20 to 26°C)

Legend

Ⓐ Boiler water temperature or supply temperature in °F/°C
Ⓑ Outside temperature in °F/°C
Ⓒ Set room temperature in °F/°C
Ⓓ Heating circuit pump OFF
Ⓔ Heating circuit pump ON

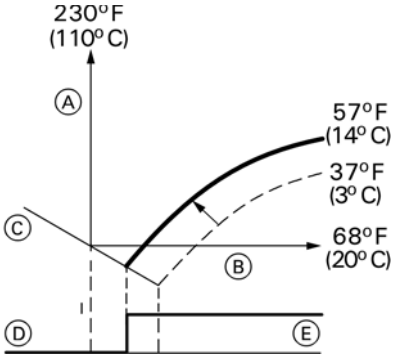
Changing the standard set room temperature

Refer to the Operating Instructions.

Selecting the set room temperature

Individually adjustable for each heating circuit.

The heating curve is offset along the axis of the set room temperature. When the heating circuit pump logic function has been enabled, it modifies the starting and stopping characteristics of the heating circuit pump.



Reduced set room temperature

Changing the reduced room temperature from 37 to 57°F (3 to 14°C)

Legend

Ⓐ Boiler water temperature or supply temperature in °F/°C
Ⓑ Outside temperature in °F/°C
Ⓒ Set room temperature in °F/°C
Ⓓ Heating circuit pump OFF
Ⓔ Heating circuit pump ON

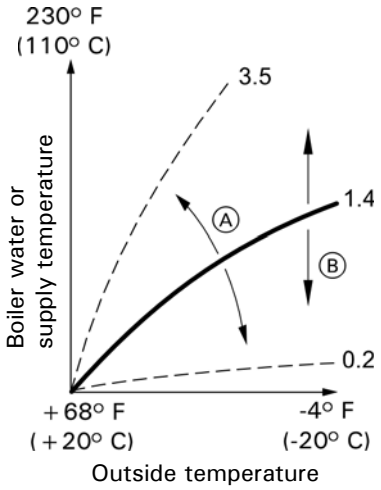
Changing the reduced set room temperature

Refer to the Operating Instructions.

Adjusting Heating Curves *(continued)*

Changing the slope and shift

Individually adjustable for each heating circuit.



Legend

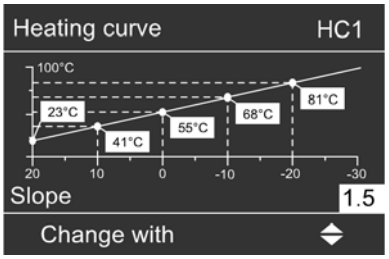
Ⓐ Changing the slope
Ⓑ Changing the shift (vertical parallel offset of the heating curve)

Extended menu:

1. ☰
2. "Heating"
3. Select heating circuit.
4. "Heating curve"
5. "Slope" or "Shift"
6. Select heating curve according to the system requirements.

Example:

Heating curve setting with slope 1.5:



Connecting the Control Unit to the LON

Single boiler system with Vitotronic 200-H and Vitocom 100 LAN1

Set the LON participant numbers and further functions via code 2 (see the following table).

Note: In the same LON system, the same participant number cannot be allocated twice. Only one Vitotronic may be programmed as fault manager. Boiler control unit Vitotronic 300 GW5B, Vitotronic 200-H or Vitocom.

The LON communication module (accessory) must be plugged in.

Installation instructions
LON communication module

Note: The data transfer via the LON system can take several minutes.

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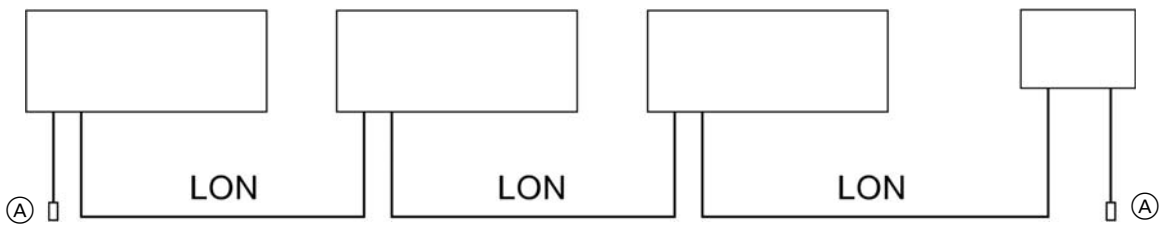
Connecting the Control Unit to the LON

Boiler control unit	Vitotronic 200-H	Vitotronic 200-H	Vitocom LAN1



Ⓐ Terminal end resistor

Participant no. 1 Code “77:1”	Participant no. 10 Code “77:10”	Participant no. 11 Set code “77:11”.	Participant no. 99
Control unit is fault manager Code “79:1”	Control unit is not fault manager Code “79:0”.	Control unit is not fault manager Code “79:0”.	Device is fault manager.
Control unit transmits the time Code “7b:1”.	The control unit receives the time Set code “81:3”.	The control unit receives the time Set code “81:3”.	Device receives the time.
Control unit transmits outside temperature Set code “97:2”.	Control unit receives the outside temperature Set code “97:1”.	Control unit receives the outside temperature Set code “97:1”.	-
Viessmann system number Code “98:1”	Viessmann system number Code “98:1”	Viessmann system number Code “98:1”	-
LON participant fault monitoring Code “9C:20”	LON participant fault monitoring Code “9C:20”	LON participant fault monitoring Code “9C:20”	-

Carrying out a LON participant check at the Vitotronic 300-K

Communication with the system devices connected to the fault manager is tested by means of a participant check.

Preconditions:

- The control unit must be programmed as fault manager (code “79:1”).
- The LON participant no. must be programmed in all control units
- The LON participant list in the fault manager must be up to date.

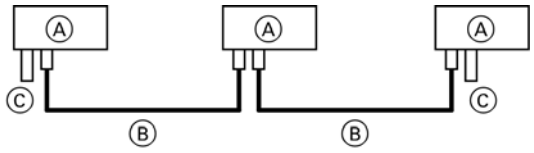
Performing the participant check:

1. Press **OK** and ☰ simultaneously for approx. 4 sec.
2. “Service functions”
3. “Participant check”
4. Select participant (e.g. participant 10).
   The participant check for the selected participant is initiated.
   - Successfully tested participants are designated with “**OK**”.
   - Unsuccessfully tested participants are designated with **“Not OK”**.

Note: To carry out a new participant check, create a new participant list with “Delete list?” (participant list is updated).

Note: During the participant check, the display for the relevant participant shows the participant no. and “Wink” for approx. 1 min.

Making the LON Connection



The line may be up to ≤ 23 ft. (7 m) long

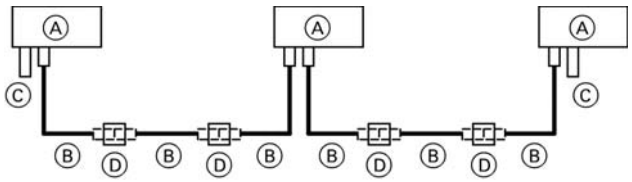
Legend
Ⓐ Control unit or Vitocom
Ⓑ LON cable, 23 ft. (7 m) long
Ⓒ Terminator

The Viessmann LON system is designed for the "Line" BUS topology with a terminator at both ends (accessories). The transfer distances for LON are subject to the electrical properties of the respective cabling. For this reason, only use the stated cable types. Use only one type of cable within the LON.

Observe the cabling requirements for the operation of the LON interface FTT 10-A (see www.echelon.com).

All Viessmann equipment is connected via RJ45 plugs. The Viessmann LON system always requires the cores "1" and "2" and the screen. The cores are interchangeable. The installation is therefore safe from pole errors.

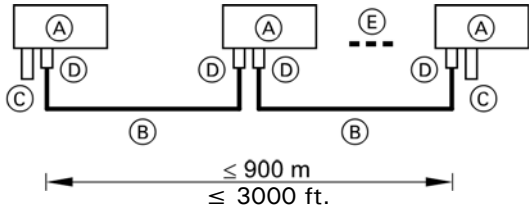
Connection with Viessmann LON cable and coupling



Installation spacing 23 to 69 ft. (7 to 21 m)

Legend
Ⓐ Control unit or Vitocom
Ⓑ LON cable, 23 ft. (7 m) long
Max. 3 cables between 2 appliances
Ⓒ Terminator
Ⓓ LON coupling

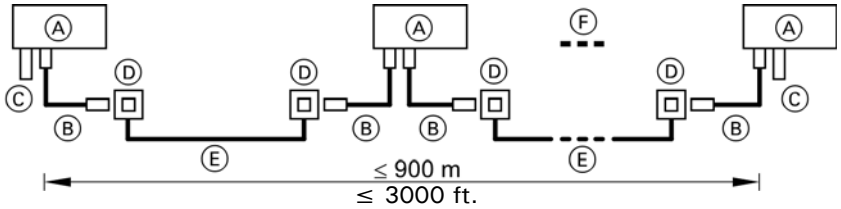
Connection with on-site cable and LON plug



The line may be up to ≤ 3000 ft. (900 m) (with LON plug)

Legend
Ⓐ Control unit or Vitocom
Ⓑ On-site cable
Ⓒ Terminator
Ⓓ LON plug
Ⓔ Up to 99 participants

Connection with LON cable, on-site cable and LON junction box



The line may be up to ≤ 3000 ft. (900 m) (with LON junction boxes)

Legend
Ⓐ Control unit or Vitocom
Ⓑ LON cable, 23 ft. (7 m) long
Ⓒ Terminator
Ⓓ LON junction boxes
Ⓔ On-site cable
Ⓕ Up to 99 participants

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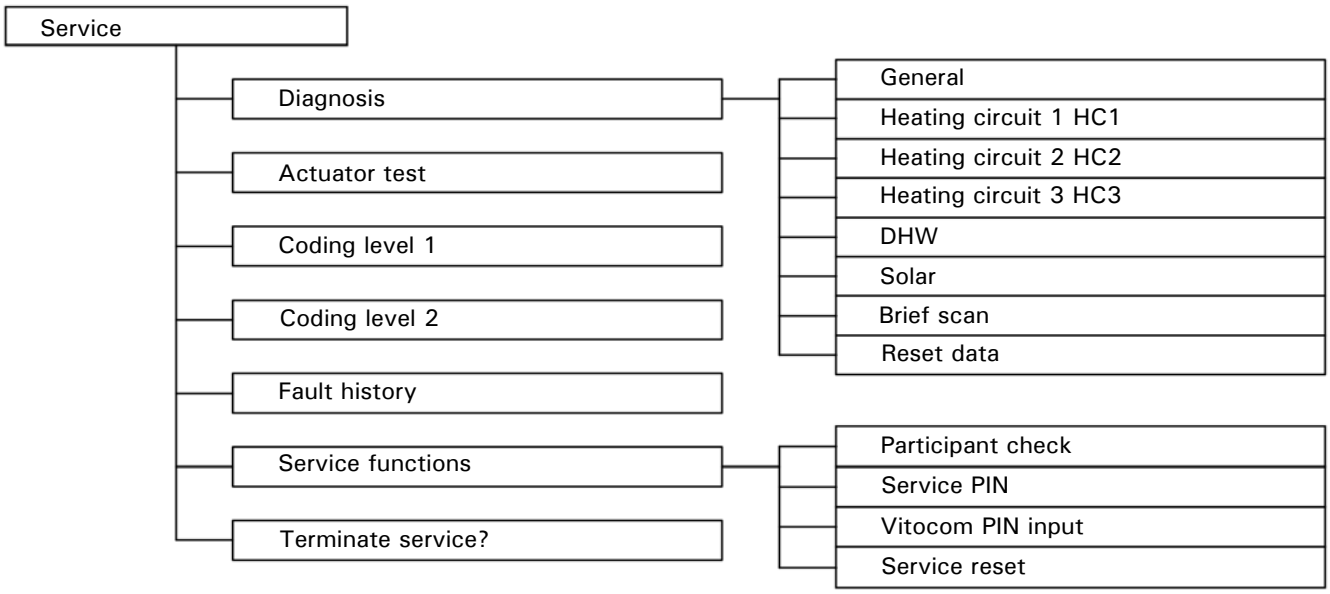
Calling up the Service Menu

Service menu overview

Press **OK** and ☰ simultaneously for approx. 4 sec.



"Coding level 2" is only displayed if this level has been enabled:

Press **OK** and ⮌ simultaneously for approx. 4 sec.

Exit Service Menu

1. Select "Terminate service?".
2. Select "Yes".
3. Confirm with **OK**.

Note: The system exits the service menu automatically after 30 minutes.

Scanning Operating Data

Operating data can be scanned in six areas (see “Diagnosis” in the overview “Service menu”).

Operating data on heating circuits with mixing valves and solar can only be scanned if the components are installed in the system.

For further information on operating data, see chapter “Brief scan”.

Note: “- - -” appears on the display if a sensor that has been scanned is faulty.

Calling up operating data

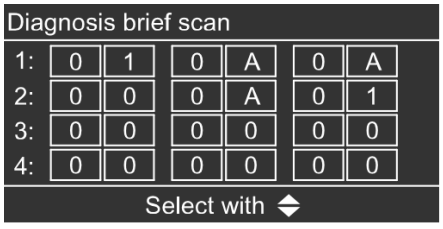
1. Press **OK** and ☰ simultaneously for approx. 4 sec.
2. “Diagnosis”
3. Select required group, e.g. “General”.

Resetting operating data

Saved operating data (e.g. hours run) can be reset to 0. The value “Adjusted outside temp” is reset to the actual value.

1. Press **OK** and ☰ simultaneously for approx. 4 sec.
2. “Diagnosis”
3. “Reset data”
4. Select required value or “All details”.

Brief Scan



In the brief scan, you can scan temperatures, software versions and connected components, for example.

1. Press **OK** and ☰ simultaneously for approx. 4 sec.
2. “Diagnosis”
3. “Brief scan”.
4. Press **OK**.
   The display shows 11 lines with 6 fields each.

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Brief Scan *(continued)*

For an explanation of the relevant values in the individual lines, see the following table:

Line (brief scan)	Field					
	1	**2**	**3**	**4**	**5**	**6**
1:	System schemes 01 to 10		Control unit software version		Programming unit software version	
2:	0 Burner type 0: Single stage 1: Two stage 2: Modulating	0	0		Appliance identification ZE-ID	
3:	0	0	Number of KM BUS participants		Software version Solar control module	
4:	0	0	0	0	0	0
5:	0	0	0	0	Software version, extension AM1	Software version, extension EA1
6:	0	0	0	0	0	0
7:	Subnet address/system number		Node address		0	0
8:	SNVT config. 0: Auto 1: Tool	Software version Communic. coproc.	Software version Neuron Chip		Number of LON participants	
	Heating circuit HC1		**Heating circuit HC2**		**Heating circuit HC3**	
9:	Remote control 0: none 1: Vitotrol 200A or Vitotrol 200RF 2: Vitotrol 300A or Vitohome 300	Software version Remote control	Remote control 0: none 1: Vitotrol 200A or Vitotrol 200RF 2: Vitotrol 300A or Vitohome 300	Software version Remote control	Remote control 0: none 1: Vitotrol 200A or Vitotrol 200RF 2: Vitotrol 300A or Vitohome 300	Software version Remote control
10:	0	0	0	0	0	0
11:	0	0	Software version, extension for heating circuits 2 and 3 with mixing valve	0	Software version, extension for heating circuits 2 and 3 with mixing valve	0
			Note: The displays in fields 3 and 5 are the same.			

Scanning and Resetting Service Display

When the limits specified in the "Boiler" group have been reached via coding addresses "1F", "21" and "23", "Service" is displayed and 🔧 flashes.

Note: Set code "24:1" and then code "24:0" in the "Boiler" group if a service is carried out before "Service" is displayed. The selected service parameters for hours run and intervals are reset to 0.

Acknowledging a service

Press **OK** to acknowledge a service message.

Note: The service message is transferred to the menu. An acknowledged service message that was not reset reappears the following Monday.

After a service has been carried out (reset service)

1. Reset code "24:1" to "24:0" in the "Boiler" group.

   Note: If coding address "24" is not reset, "Service" will be displayed again on the following Monday.
2. Press **OK** and ☰ simultaneously for approx. 4 sec.
3. "Service functions"
4. "Service reset"

Note: The selected service parameters for hours run and time interval restart at 0.

Calling up acknowledged maintenance messages

Extended menu:

1. ☰
2. "Service"

Fault Display

If there is a fault, the red fault display on the control unit flashes. "Fault" is displayed and ⚠ flashes.
The fault code is displayed with **OK**.

Note: If a central fault message facility is connected, this is started.

For an explanation of the fault code, see the chapter "Fault codes".
For some faults, the type of fault is also displayed in plain text.

Acknowledging a fault

Follow the instructions on the display.

Note: The fault message is transferred to the menu. A fault messaging facility, if connected, will be switched off.
If an acknowledged fault is not remedied, the fault message will be re-displayed the following day and the fault message facility restarted.

Calling up acknowledged fault messages

Extended menu:

1. ☰
2. "Fault"

Calling up fault codes from the fault memory (fault history)

The 10 most recent faults (including those remedied) are saved and can be called up.
Faults are sorted by date.

1. Press **OK** and ☰ simultaneously for approx. 4 sec.
2. "Fault history"
3. "Display?"

Fault Display *(continued)*

Fault codes

Displayed fault code	System characteristics	Cause	Measures
0F	Control mode.	Service "0F" is only displayed in the fault history.	Service required. **Note:** After the service, set code "24:0"
10	Controls as if the outside temperature was 32°F (0°C)	Short circuit, outside temperature sensor	Check the outside temperature sensor (see page 125).
18	Controls as if the outside temperature was 32°F (0°C)	Lead break, outside temperature sensor	Check the outside temperature sensor (see page 125).
19	Controls as if the outside temperature was 32°F (0°C)	Communication fault, outside temperature sensor RF	Check the wireless connection (place the outside temperature sensor RF close to the wireless base). De-register and then re-register the outside temperature sensor. Replace if necessary (see separate installation and service instructions).
30	- With DHW tank: Circulation pump for DHW tank heating on; boiler is maintained at set DHW tank temperature. - Without DHW tank: Boiler is regulated by the temperature controller.	Short circuit, boiler water temperature sensor	Check the boiler water temperature sensor (see page 124).
38	- With DHW tank: Circulation pump for DHW tank heating on; boiler is maintained at set DHW tank temperature. - Without DHW tank: Boiler is regulated by the temperature controller.	Lead break, boiler water temperature sensor	Check the boiler water temperature sensor (see page 124).
40	Mixing valve is being closed.	Short circuit, supply temperature sensor, heating circuit with mixing valve M2 (heating circuit 2)	Check the supply temperature sensor (see page 124).

Fault Display *(continued)*

Displayed fault code	System characteristics	Cause	Measures
44	Mixing valve is being closed.	Short circuit, supply temperature sensor, heating circuit with mixing valve M3 (heating circuit 3)	Check the supply temperature sensor (see page 124).
48	Mixing valve is being closed.	Lead break, supply temperature sensor, heating circuit with mixing valve M2 (heating circuit 2)	Check the supply temperature sensor (see page 124).
4C	Mixing valve is being closed.	Lead break, supply temperature sensor, heating circuit with mixing valve M3 (heating circuit 3)	Check the supply temperature sensor (see page 124).
50	DHW tank primary pump "ON": Set DHW temperature = set supply temperature Priority control is cancelled. or With primary store system: DHW tank heating is started and stopped by DHW tank temperature sensor 2.	Short circuit, DHW tank temperature sensor 1	Check the DHW tank temperature sensor (see page 124).
51	With primary store system: DHW tank heating is started and stopped by DHW tank temperature sensor 1.	Short circuit, DHW tank temperature sensor 2	Check the DHW tank temperature sensor (see page 124).
52	Control mode.	Short circuit, supply temperature sensor low loss header	Check the supply temperature sensor (see page 124).
58	DHW tank primary pump "ON": Set DHW temperature = set boiler water temperature Priority control is cancelled. or With primary store system: DHW tank heating is started and stopped by DHW tank temperature sensor 2.	Lead break, DHW tank temperature sensor 1	Check the DHW tank temperature sensor (see page 124).

Fault Display *(continued)*

Displayed fault code	System characteristics	Cause	Measures
59	With primary store system: DHW tank heating is started and stopped by DHW tank temperature sensor 1.	Lead break, DHW tank temperature sensor 2	Check the DHW tank temperature sensor (see page 124).
5A	Control mode.	Lead break, low loss header supply temperature sensor	Check the supply temperature sensor (see page 124). Without supply temperature sensor: Set code “52:0” in the “General” group.
60	Boiler with maximum temperature, no output reduction, mixing valve return temperature control “Open”.	Short circuit, temperature sensor 17A	Check temperature sensor 17A (see page 124).
68	Boiler with maximum temperature, no output reduction, mixing valve return temperature control “Open”.	Lead break, temperature sensor 17A	Check temperature sensor 17A (see page 124). Without temperature sensor: Set code “4A:0” in the “General” group.
70	Shunt pump constantly “ON”. With primary store system: Mixing valve primary circuit “Closed”, no DHW heating.	Short circuit, temperature sensor 17B	Check temperature sensor 17B (see page 124).
78	Shunt pump constantly “ON”. With primary store system: Mixing valve primary circuit “Closed”, no DHW heating.	Lead break, temperature sensor 17B	Check temperature sensor 17B (see page 124). Without temperature sensor: Set code “4b:0” in the “General” group.
90	Control mode.	Short circuit, temperature sensor 7, Connection at the solar control module.	Check temperature sensor 7 (see separate installation and service instructions).
91	Control mode.	Short circuit, temperature sensor 10, Connection at the solar control module.	Check temperature sensor 10 (see separate installation and service instructions).

Fault Display *(continued)*

Displayed fault code	System characteristics	Cause	Measures
92	No solar DHW heating.	Short circuit, collector temperature sensor, connection of temperature sensor [6] at solar control module.	Check sensor at the solar control unit (see separate installation and service instructions).
93	Control mode	Short circuit, temperature sensor, connection at S3 of the Vitosolic	Check sensor at the solar control unit (see separate installation and service instructions).
94	No solar DHW heating.	Short circuit, DHW tank temperature sensor, connection of temperature sensor [5] at solar control module.	Check sensor at the solar control unit (see separate installation and service instructions).
98	Control mode	Lead break, temperature sensor [7], Connection at the solar control module.	Check temperature sensor [7] (see separate installation and service instructions). Set coding address “20” in the “Solar” group.
99	Control mode	Lead break, temperature sensor [10], Connection at the solar control module.	Check temperature sensor [10] (see separate installation and service instructions). Set coding address “20” in the “Solar” group.
9A	No solar DHW heating.	Lead break, collector temperature sensor, temperature sensor connection [6] at solar control module.	Check sensor [6] at the solar control unit (see separate installation and service instructions).
9b	Control mode.	Lead break, temperature sensor, connection at S3 of the Vitosolic	Check sensor at the solar control unit (see separate installation and service instructions).

Fault Display *(continued)*

Displayed fault code	System characteristics	Cause	Measures
9C	No solar DHW heating.	Lead break, DHW tank temperature sensor, temperature sensor connection [5] at solar control module.	Check sensor at the solar control unit (see separate installation and service instructions).
9E	Control mode.	No flow rate in solar circuit or flow rate too low, or temperature limiter has responded.	Check solar circuit. Acknowledge fault message (see separate installation and service instructions).
9F	Control mode.	Solar control module faulty. Displayed if a fault occurs at these appliances for which there is no fault code in the Vitotronic.	Check solar control unit (see separate installation and service instructions).
A0	Boiler cools down.	Fault, safety equipment at "X7" of plug-in adaptor 2 for external safety equipment.	Check safety equipment, and reset if required.
A1	Boiler cools down.	Fault, safety equipment at "X3" of plug-in adaptor 2 for external safety equipment.	Check safety equipment, and reset if required.
A2	Boiler cools down.	Fault, safety equipment at "X2" of plug-in adaptor 2 for external safety equipment.	Check safety equipment, and reset if required.
A3	Boiler cools down.	Fault, safety equipment at "X1" of plug-in adaptor 2 for external safety equipment	Check safety equipment, and reset if required.
AA	Control mode.	Therm-Control configuration fault: Plug [17]A not plugged in.	Insert plug [17]A. For Vitocrossal, code "0d: 0" must be selected.
Ab	Control operation; DHW tank may be cold.	Primary store system configuration error: Code "55:3" has been selected, but plug [17]B is not plugged in and/or Codes "4C:1" and "4E:2" have not been set.	Insert plug [17]B and check codes.
AC	Control mode.	Return temperature control configuration error: Code "0C:1" in group 2 "Boiler" has been selected, but plug [17] is not plugged in and/or code "4E:1" has not been set.	Insert plug [17]A and check codes.

Fault Display *(continued)*

Displayed fault code	System characteristics	Cause	Measures
b0	Control mode.	Short circuit, flue gas temperature sensor	Check the flue gas temperature sensor (see page 125).
b1	Control mode.	Communication error, programming unit	Check connections and replace the programming unit if required.
b5	Control mode.	Internal fault	Check PCB (see parts list) is plugged in correctly.
b6	Control mode.	Invalid hardware recognized	Check coding address “92” in the “General” group; “92:166” must be set. **Note:** Code “8A:176” in the “General” group must be selected for coding address “92” to be displayed.
b7	Boiler is regulated by the temperature controller.	Boiler coding card faulty	Plug in or replace boiler coding card (see page 37).
b8	Control mode.	Lead break, flue gas temperature sensor	Check the flue gas temperature sensor (see page 125). Without flue gas temperature sensor: Set code “1F:0” in the “Boiler” group.
bA	Mixing valve “Closed”.	Communication error, PCB extension for heating circuits 2 and 3 with mixing valve	Check that the PCB and ribbon cable are plugged in, and replace PCB if required.
bC	Control mode without remote control.	Communication error, remote control Vitotrol heating circuit without mixing valve A1 (heating circuit 1)	Check connections, lead (see separate installation and service instructions) and coding address “A0” in the “Heating circuit...” group.
bd	Control mode without remote control.	Communication error, Vitotrol remote control, heating circuit with mixing valve M2 (heating circuit 2)	Check connections, lead (see separate installation and service instructions) and coding address “A0” in the “Heating circuit...” group.
bE	Control mode without remote control.	Communication fault, remote control Vitotrol with mixing valve M3 (heating circuit 3)	Check connections, lead (see separate installation and service instructions) and coding address “A0” in the “Heating circuit...” group.

Fault Display *(continued)*

Displayed fault code	System characteristics	Cause	Measures
bF	Control mode. No communication via LON.	Incorrect LON communication module	Replace LON communication module.
C1	Boiler cools down.	External safety equipment at plug 150	Check connection and external safety equipment. (see page 43)
C2	Control mode.	Lead break, KM BUS to solar control module or Vitosolic	Check KM BUS cable and appliance. Without solar control unit: Set code “54:0” in the “General” group.
C3	Control mode.	Communication fault, extension AM1	Check connections. Without extension AM1: Set code “32:0” in the “General” group.
C8	Boiler cools down.	Fault, low water indicator at “X7” of plug-in adaptor 1 for external safety equipment.	Check the system water level of the system; reset low water indicator
C9	Boiler cools down.	Fault, maximum pressure limiter at “X3” of plug-in adaptor 1 for external safety equipment.	Check system pressure; reset maximum pressure limiter
CA	Boiler cools down	Fault, minimum or maximum pressure limiter 2 at “X2” of plug-in adaptor 1 for external safety equipment.	Check system pressure, reset minimum or maximum pressure limiter 2.
Cb	Boiler cools down	Additional high limit safety cut-out fault or temperature limiter at “X1” of plug-in adaptor 1 for external safety equipment.	Check system temperature; reset high limit safety cut-out
Cd	Control mode.	Vitocom 100 communication fault	Check connections and Vitocom 100 (see separate installation and service instructions). Without Vitocom 100: Set code “95:0” in the “General” group.
CE	Control mode.	Communication fault, plug-in adaptor 1 for external safety equipment	Check plug-in adaptor (see page 179). Without plug-in adaptor: Set code “30:0” in the “General” group

Fault Display *(continued)*

Displayed fault code	System characteristics	Cause	Measures
CF	Control mode. No communication via LON.	Communication fault, LON communication module of control unit	Check LON communication module and replace if required. If no LON communication module is installed, set code “76:0” in “General” group.
d1	Boiler cools down	Burner fault	Check the burner
d2	Control mode.	Communication error 2, plug-in adaptor for external safety equipment	Check plug-in adaptor . Without plug-in adaptor: Set code “31:0” in the “General” group
d3	Control mode.	Communication error, extension EA1	Check connections (see page 127). Without extension EA1: Set code “5b:0” in the “General” group.
d4	Boiler cools down	The high limit safety cut-out has responded or fuse F2 has blown	Check the high limit safety cut-out or the burner, burner loop and fuse F2.
d6	Control mode.	Input DE1 at extension EA1 reports a fault	Remove fault at appliance concerned.
d7	Control mode.	Input DE2 at extension EA1 reports a fault	Remove fault at appliance concerned.
d8	Control mode.	Input DE3 at extension EA1 reports a fault	Remove fault at appliance concerned.
dA	Control mode without room influence.	Short circuit, room temperature sensor, heating circuit without mixing valve A1 (heating circuit 1)	Check the room temperature sensor (see page 124).
db	Control mode without room influence.	Short circuit, room temperature sensor, heating circuit with mixing valve M2 (heating circuit 2)	Check the room temperature sensor (see page 124).
dC	Control mode without room influence.	Short circuit, room temperature sensor, heating circuit with mixing valve M3 (heating circuit 3)	Check the room temperature sensor (see page 124).
dd	Control mode without room influence.	Lead break, room temperature sensor, heating circuit without mixing valve A1 (heating circuit 1)	Check room temperature sensor (see page 124)
dE	Control mode without room influence.	Lead break, room temperature sensor, heating circuit with mixing valve M2 (heating circuit 2)	Check room temperature sensor (see page 124)
dF	Control mode without room influence.	Lead break, room temperature sensor, heating circuit with mixing valve M3 (heating circuit 3)	Check room temperature sensor (see page 124)

Note: In case of participant faults, “Fault participant” ... is displayed.

Boiler Water Temperature Control

Brief description

- The boiler water temperature is regulated by starting and stopping the burner or through modulation.
- The set boiler water temperature is determined from the following parameters:
  - Set supply temperature of the heating circuits connected to the control unit and the heating circuits connected via the LON BUS
  - External demand
  - Set DHW temperature
- The boiler coding card defaults a minimum boiler water temperature that must be maintained to protect the boiler.
- In conjunction with Therm-Control:
  The set boiler water temperature will be increased when the actual temperature at the Therm-Control sensor falls below the set temperature.
- When the DHW tank is heated up, the default set boiler water temperature is 20 K above the set DHW temperature (adjustable via coding address “60” in the “DHW” group).

Functions

The boiler water temperature is captured by the following equipment:

- High limit safety cut-out STB (liquid expansion)
- Temperature controller TR (liquid expansion)
- Boiler water temperature sensor NTC 10 kΩ

Upper control range limits

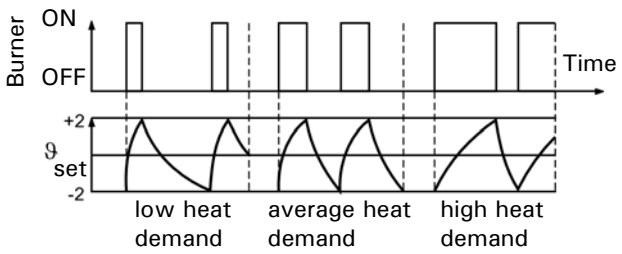
- High limit safety cut-out STB
  230/212°F (110/100°C)
- Temperature controller TR
  203/212/230°F (95/100/110°C)
- Electronic maximum temperature limit:
  - Setting range: 68 to 261°F (20 to 127°C)
  - Changed via coding address “06” in the “Boiler” group.

Lower control range limits

- In standard mode and when frost protection is enabled, the boiler water temperature will be regulated subject to the respective boiler.

Boiler Water Temperature Control *(continued)*

Switching hysteresis, burner



Permanent switching hysteresis

Code “04:0”

Heat demand-dependent switching hysteresis

The heat demand-dependent switching hysteresis takes the boiler load into account.
The switching hysteresis, i.e. the burner runtime varies subject to actual heat demand.

Control sequence

Boiler goes cold

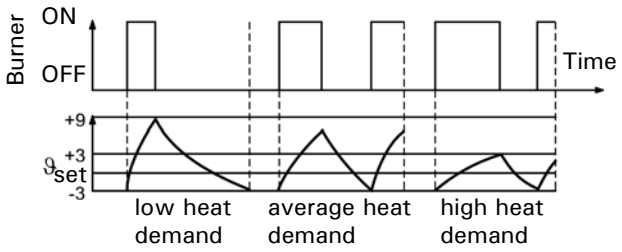
(set value – 2 K)

The burner start signal is selected as the set boiler water temperature minus 2 K, and the burner starts its own monitoring program.

Note: The burner start may be delayed by a few minutes subject to the number of auxiliary circuits and the combustion type.

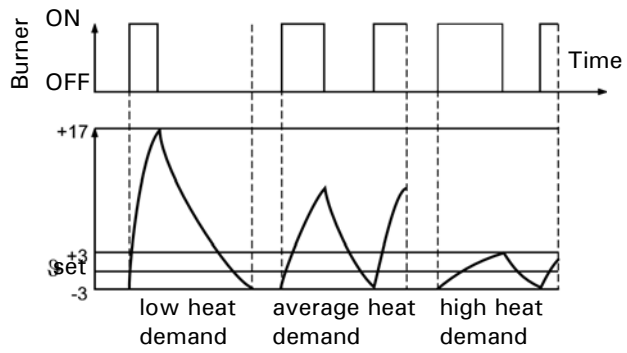
Boiler heats up

The burner stopping point is determined by the shutdown differential (coding address “13” in the “boiler” group.



ERB50 function

Code “04:1”
Subject to heat demand, values between 6 and 12 K result.



ERB80 function

Code “04:2”
Subject to heat demand, values between 6 and 20 K result.

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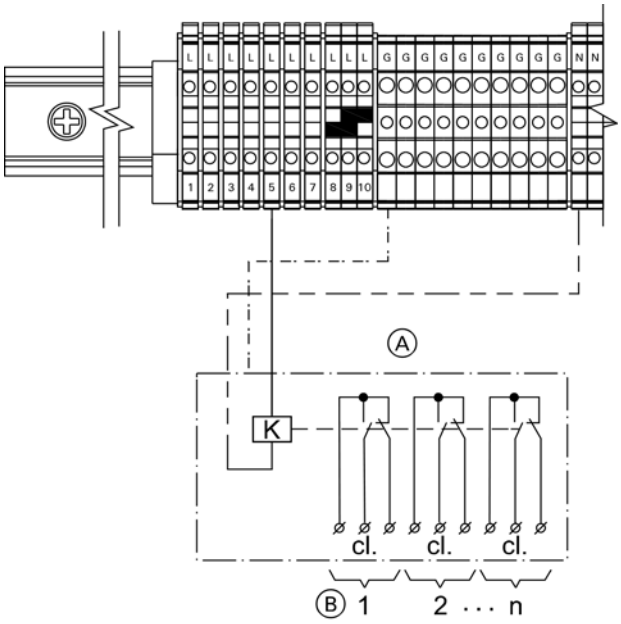
Boiler Water Temperature Control *(continued)*

Boiler protection functions

Therm-Control

(Start-up system)

- For heating systems with distributor installed close to the boiler.
- Requirement:
  The boiler water flow rate in the startup phase (e.g. after a weekend shutdown) must be able to be reduced by at least 50%.
- Also affects the heating circuits of a Vitotronic 200-H installed downstream.



Legend

20A1 Closing the mixing valves
Ⓐ Contactor relay
Ⓑ Downstream heating circuit controller, switching contact closed:
Signal for mixing valve "Close"

Function

The Therm-Control sensor, installed near the return connector, captures the return temperature.

The burner is ramped up to full load if the factory-selected set temperature (defaulted by the boiler coding card) is not being achieved. The flow rate is reduced via the mixing valve.

When the set temperature is exceeded, the mixing valves are opened and the flow rate gradually increased to 100%.

Therm-Control in conjunction with heating systems that are not connected with the Vitotronic via LON

Plug 20A1 of the Vitotronic is used as switching contact for the Therm-Control.
Required code: "4C:2" in the "General" group.

Raising the return temperature via a shunt pump

- For heating systems with distributor installed close to the boiler.
- Requirement:
  – The boiler water flow rate must be able to be reduced by at least 50%.
  – Shunt pump sized to approx. 30% of the total throughput.
- Also affects the heating circuits of a Vitotronic 200-H installed downstream.

Function

Temperature sensors T1 and T2 capture the return temperature at different test points.

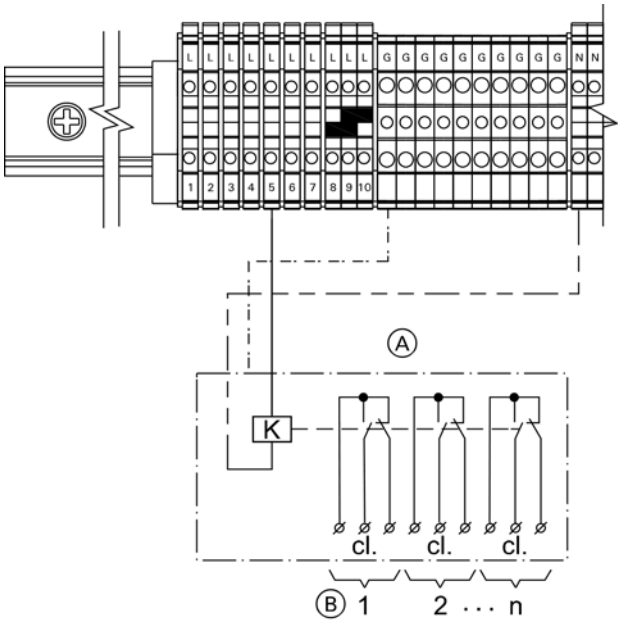
The shunt pump is started via temperature sensor T2 if the factory-selected minimum return temperature (defaulted by the boiler coding card) is not being achieved.

The flow rate will be reduced via the mixing valve if the minimum return temperature captured by temperature sensor T1 is not achieved despite the return temperature raising.

Boiler Water Temperature Control *(continued)*

Return temperature raising in conjunction with heating systems that are not connected with the Vitotronic via LON

Plug 20A1 of the Vitotronic is used as switching contact. Required code: “4C:2” in the “General” group.



Legend

20A1 Closing the mixing valves
Ⓐ Contactor relay
Ⓑ Downstream heating circuit controller, switching contact closed:
Signal for mixing valve “Close”

Return temperature control via shunt pump and 3-way mixing valve

For heating systems where downstream heating circuits cannot be controlled, e.g. older heating systems or commercial nurseries.

Function

Temperature sensors T1 and T2 capture the return temperature at different test points.

The shunt pump is started via temperature sensor T2 if the factory-selected minimum return temperature (defaulted by the boiler coding card) is not achieved.

The flow rate will be reduced via the 3- way mixing valve if, in spite of the return temperature raising facility, the minimum return temperature captured by temperature sensor T1 is not achieved.

Heating Circuit Control

Brief description

- Type GW2B:
  The control unit has control circuits for one heating circuit without mixing valve A1 (heating circuit 1) and two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3).
- The set supply temperature of every heating circuit is determined from the following parameters:
  – Outside temperature
  – Set room temperature
  – Operating mode
  – Heating curve slope and shift
- The boiler coding card defaults a minimum boiler water temperature that must be maintained to protect the boiler.
- The supply temperature of heating circuits without mixing valve is equal to the boiler water temperature.
- The supply temperature of the heating circuits with mixing valve is regulated by the stepped opening or closing of the mixing valves.
  The mixing valve motor control changes the actuating and pause times subject to the control differential (control deviation).

Functions

The heating circuit without mixing valve is subject to the boiler water temperature and its control range limits.

The heating circuit pump is the only actuator.

The supply temperature of the heating circuits with mixing valve is recorded by the supply temperature sensor of the relevant heating circuit.

Time program

In accordance with the time program in the "Heating and DHW" heating program, the control unit regulates between "Central heating with standard room temperature" and "Central heating with reduced room temperature".
Every operating mode has its own set level.
4 time phases per day can be selected.

Outside temperature

A heating curve must be set for matching the control unit to the building and the heating system.
The heating curve characteristics determine the set boiler water temperature subject to outside temperature.
The control unit uses an average outside temperature. This comprises the actual and the adjusted outside temperature.

Room temperature

In conjunction with the remote control and room temperature hook-up (coding address "b0" in the "Heating circuit..." group):

Compared with the outside temperature, the room temperature has a greater influence on the set boiler water temperature (changed via coding address "b2" in the "Heating circuit..." group).

In conjunction with heating circuits with mixing valve:

For control differentials (actual value deviation) above 2 K room temperature, the influence can be increased again (coding address "b6" in the "Heating circuit..." group):

- Quick heat-up
  The set room temperature must be raised by at least 2 K by the following measures:
  – Activating party mode
  – Changeover from central heating with reduced temp. to central heating with standard temp.
  – Start optimization (coding address "b7" in the "Heating circuit..." group)
  Quick heat-up will stop when the set room temperature has been reached.
- Quick setback
  The set room temperature must be reduced by at least 2 K by the following measures:
  – Activating economy mode
  – Changeover from central heating with standard temp. to central heating with reduced temp.
  – Stop optimization (coding address "C1" in the "Heating circuit..." group)
  Quick setback will end when the set room temperature has been reached.

DHW temperature - Priority control

- With priority control: (code "A2:2" in the "Heating circuit..." group):
  The set supply temperature is set to 32°F (0°C) during DHW tank heating. The mixing valve closes and the heating circuit pump is switched off.
- Without priority control:
  The heating circuit control unit continues to operate with the same set value.
- With modulating priority control in conjunction with heating circuits with mixing valve:
  The heating circuit pump remains switched on. The set supply temperature of the heating circuits will be reduced, for as long as the set boiler water temperature has not been reached during DHW tank heating.
  The set supply temperature is determined from the following parameters:
  – Outside temperature
  – Differential between the set and the actual boiler water temperature
  – Heating curve slope and shift
  – Setting of coding address "A2" in the "Heating circuit..." group

Heating Circuit Control *(continued)*

Heating circuit pump logic (economy mode)

The heating circuit pump is switched off [set supply temperature set to 32°F (0°C)] if the outside temperature exceeds the value selected via coding address "A5" in the "Heating circuit..." group.

Extended economy mode

The heating circuit pump is switched off (set supply temperature set to 32°F (0°C) if one of the following criteria is met:

- The adjusted outside temperature exceeds the value selected via coding address "A6" in the "Heating circuit..." group.
- The heating circuit pump can be switched off for a time calculated by the control unit when changing over from heating mode to reduced mode.

  Requirement:
  - There is no risk of frost.
  - Coding address "b0" in the "Heating circuit..." group must be set to 0.

  The idle period can be individually adjusted via coding address "A9" in the "Heating circuit..." group.

  Note: If, during the pump idle period, the system is switched over to heating mode or the set room temperature is increased, the heating circuit pump is switched on, even if the period has not yet expired.

- The actual room temperature exceeds the value selected via coding address "b5" in the "Heating circuit..." group.
- The mixing valve has been closed for 12 min. (mixing valve economy function, coding address "A7" in the "Heating circuit..." group).

System dynamics

You can influence the control characteristics of the mixing valves via coding address "C4" in the "Heating circuit..." group.

Central control

Central control for a heating circuit can be programmed via coding address "7A" in the "General" group.

The heating and holiday program then applies to all additional heating circuits of the system.

For these heating circuits, when the heating and holiday program is enabled, "Central control" is displayed. Any holiday programs that may have been set will be deleted.

Party and economy modes cannot be enabled on all control units.

Therm-Control

The output is reduced if the actual temperature at the Therm-Control sensor falls below the set temperature. This closes the heating circuit mixing valves.

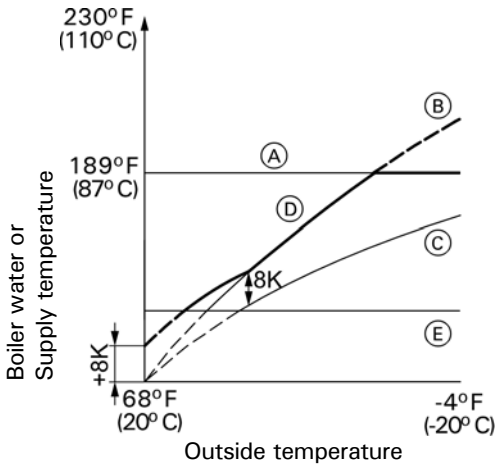
Frost protection

The supply temperature is maintained in accordance with the heating curve for the reduced set room temperature, but at min. 50°F (10°C).

A variable frost limit can be set in accordance with coding address "A3" in the "Heating circuit..." group.

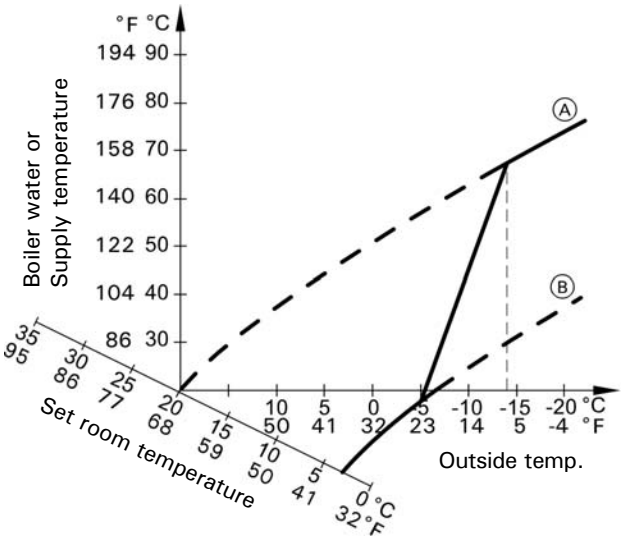
Heating Circuit Control *(continued)*

Supply temperature control



Legend

Ⓐ Max. boiler water temperature
Ⓑ Slope = 1.8 for heating circuit without mixing valve
Ⓒ Slope = 1.2 for heating circuit with mixing valve
Ⓓ Boiler water temperature (with a differential temperature = 8 K)
Ⓔ Lower boiler water temperature, defaulted by the boiler coding card



Legend

Ⓐ Heating curve for operation with standard room temperature
Ⓑ Heating curve for operation with reduced room temperature

Differential temperature:

The differential temperature is adjustable via coding address “9F” in the “General” group, factory set condition 8 K.

The differential temperature is the value by which the common supply temperature should be higher than the highest currently required supply temperature of the heating circuit with mixing valve.

- System with only one heating circuit with mixing valve: The set boiler water temperature is regulated automatically to 8 K above the set supply temperature of the heating circuit with mixing valve.
- System with heating circuit and heating circuits with mixing valve:
  The set boiler water temperature operates in accordance with its own heating curve. The differential temperature of 8 K towards the set supply temperature of the heating circuits with mixing valve is set at the factory.

Raising the reduced room temperature

During operation with reduced room temperature, the reduced set room temperature can be automatically raised subject to the outside temperature. The temperature is raised in accordance with the selected heating curve, but no higher than the set standard room temperature.

The outside temperature limits for the start and end of the temperature raising can be adjusted via coding addresses “F8” and “F9” in the “Heating circuit...” group.

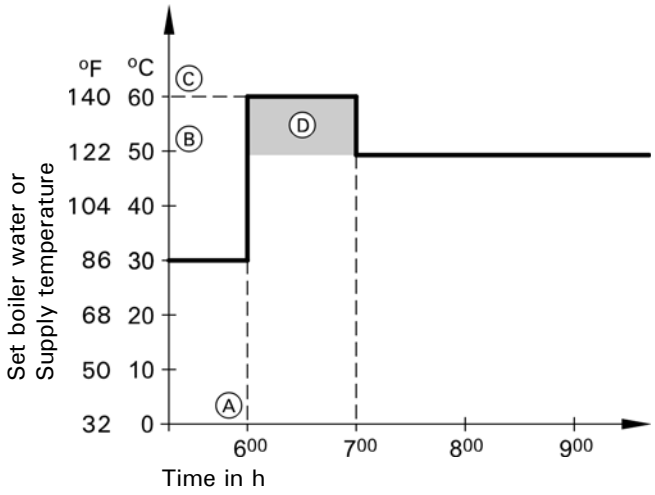
Reducing the heat-up time

During the transition from operation with reduced room temperature to operation with standard room temperature, the boiler water or supply temperature will be raised in accordance with the selected heating curve. The boiler water or supply temperature increase can be automatically raised.

The value and duration of the additional increase of the set boiler water or supply temperature can be adjusted in coding addresses “FA” and “Fb” in the “Heating circuit...” group.

Heating Circuit Control *(continued)*

Example using the settings in the factory set condition



Legend

Ⓐ Start of operation with standard room temperature
Ⓑ Set boiler water or supply temperature in accordance with the selected heating curve
Ⓒ Set boiler water or supply temperature in accordance with coding address "FA":
122°F (50°C) + 20% = 146°F (60°C)
Ⓓ Duration of operation with raised set boiler water or supply temperature in accordance with coding address "Fb":
60 min

Control sequence

Mixing valve circuit

The mixing valve motor will not be controlled within the "neutral zone" (±1 K).

Supply temperature drops

(Set value −1 K)
The mixing valve motor receives the signal "Mixing valve open". The signal duration lengthens with an increasing control differential.
The duration of pauses reduces with an increasing control differential.

Supply temperature rises

(Set value +1 K)
The mixing valve motor receives the signal "Mixing valve closed". The signal duration lengthens with an increasing control differential.
The duration of pauses reduces with an increasing control differential.

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DHW Tank Temperature Control

Brief description

- The DHW tank temperature control is a constant temperature control. This is the result of starting and stopping the circulation pump for DHW tank heating. The switching differential is ±2.5 K.
- When the DHW tank is heated, a set supply temperature is specified that is 20 K higher than the set DHW temperature (adjustable via coding address "60" in the "DHW" group).

Functions

Time program

An automatic or an individual time program may be selected for DHW heating and the DHW recirculation pump.

Compared with the heating circuit heatup phase, DHW heating starts 30 min earlier in automatic mode.

The individual time program enables up to 4 time phases per day to be set for DHW heating and the DHW recirculation pump for every day of the week.

All DHW tank heating sequences will be completed independently of the time program.

In conjunction with coding address "7F" in the "General" group

- Detached house
  Code "7F:1":
  – Automatic mode
    The heating times for heating circuit 1 are applied to systems with two or three heating circuits.
  – Individual time program
    The time phases for DHW heating and the DHW recirculation pump have the same effect on all heating circuits.
- Apartment building
  Code "7F:0":
  – Automatic mode
    For systems with two or three heating circuits, the heating times for the relevant heating circuit will be applied.
  – Individual time program
    The time phases for DHW heating and the DHW recirculation pump can be adjusted individually for each heating circuit.

Priority control

- With priority control: (code "A2:2" in the "Heating circuit..." group):
  The set supply temperature is set to 32°F (0°C) during DHW tank heating.
  The mixing valve closes and the heating circuit pump is switched off.
- Without priority control:
  The heating circuit control unit continues to operate with the same set value.
- With modulating priority control in conjunction with heating circuits with mixing valve:
  The heating circuit pump remains switched on. The set supply temperature of the heating circuits will be reduced, for as long as the set boiler water temperature has not been reached during DHW tank heating.
  The set supply temperature is determined from the following parameters:
  – Outside temperature
  – Differential between the set and the actual boiler water temperature
  – Heating curve slope and shift
  – Setting of coding address "A2" in the "Heating circuit..." group

DHW Tank Temperature Control *(continued)*

Frost protection

The DHW tank will be heated to 68°F (20°C) if the DHW temperature sinks below 41°F (5°C).

Auxiliary function for DHW heating

This function is activated by providing a second set DHW temperature via coding address "58" in group "DHW" and activating the fourth DHW phase for DHW heating.

Set DHW temperature

The set DHW temperature can be adjusted between 50 and 140°F (10 and 60°C).
The set value range can be extended to 203°F (95°C) via coding address "56" in the "DHW" group.
The set default value of the programming unit and/or the Vitotrol 300A remote control units can be allocated via coding address "66" in the "DHW" group.

DHW circulation pump

This delivers hot water to the draw-off points at adjustable times.
Four time phases can be selected at the control unit for every day.

Auxiliary circuits

DHW heating in conjunction with the heating circuits can be disabled or enabled by changing over the heating program (see coding address "d5" in the "Heating circuit ..." group).

System with primary store system

The above functions also apply in conjunction with primary store systems.

Set the following codes:

"55:3" in the "DHW" group; "4C:1", "4E:2" in the "General" group.

System with solar control unit

A third set DHW temperature can be specified via coding address "67" in the "DHW" group.
The DHW tank is only reheated by the boiler if the temperature falls below this value.

Control sequence

Code "55:0" in the "DHW" group, DHW tank heating

The DHW tank goes cold (set value −2.5 K, adjustable via coding address "59"):

- The set boiler water temperature is set 20 K higher than the set DHW temperature (adjustable via coding address "60").
- Pump on:
  - Starting the circulation pump for DHW tank heating subject to the boiler water temperature (code "61:0"). The circulation pump starts when the boiler water temperature is 7 K higher than the DHW temperature.
  - Immediate start of the circulation pump for DHW tank heating (code "61:1").

The DHW tank is hot (set value +2.5 K):

- The set boiler water temperature is returned to the weather-compensated set value.
- Pump run-on:
  The DHW tank primary pump runs on after DHW tank heating until the following criteria are met:
  - The difference between the boiler water temperature and the DHW temperature is less than 7 K.
  - The weather-compensated set boiler water temperature has been reached.
  - The set DHW temperature is exceeded by 5 K.
  - The set max. run-on time has been reached (coding address "62").
- Without pump run-on (code "62:0").

DHW Tank Temperature Control *(continued)*

Code "55:1" in the "DHW" group, adaptive DHW tank heating

With adaptive DHW tank heating, the speed of the temperature rise during DHW heating is taken into account.

The DHW tank goes cold (set value −2.5 K, adjustable via coding address "59"):

- The set boiler water temperature is set 20 K higher than the set DHW temperature (adjustable via coding address "60").
- Pump on:
  - Starting the circulation pump for DHW tank heating subject to the boiler water temperature (code "61:0"). The circulation pump starts when the boiler water temperature is 7 K higher than the DHW temperature.
  - Immediate start of the circulation pump for DHW tank heating (code "61:1").

The DHW tank is hot:

- The control unit checks whether the boiler will be required to supply heat after the DHW tank has been heated up or whether residual boiler heat should be transferred to the DHW tank. Accordingly, the control unit determines the burner and circulation pump stop times to prevent the set DHW temperature being substantially exceeded after the DHW tank has been heated up.

Code "55:2" in the "DHW" group, DHW tank temperature control with 2 DHW tank temperature sensors

DHW tank temperature sensor 1 enables the circulation pump for DHW tank heating and is evaluated for stop conditions during the pump run-on time.

DHW tank temperature sensor 2:

The DHW tank heating will be switched on early if a lot of hot water is drawn off. The DHW tank heating will be switched off early if no hot water is drawn off.

DHW tank goes cold:

- Set value −2.5 K, adjustable via coding address "59"
  or
- Actual DHW temperature at sensor 2 < set DHW temperature x factor for start time (adjustment via coding address "69")

The DHW tank is hot:

- Set value +2.5 K
  and
- Actual DHW temperature at sensor 2 > set DHW temperature x factor for stop time (adjustment via coding address "68")

Code "55:3" in the "DHW" group, DHW tank temperature control, primary store system

The DHW tank goes cold (set value −2.5 K, adjustable via coding address "59"):

- The set boiler water temperature is set 20 K higher than the set DHW temperature (change via coding address "60").
- The primary pump in the primary store system starts.
- The 3-way mixing valve opens and then regulates to the specified set value.
- The circulation pump for DHW tank heating cycles (briefly switches ON and OFF) until the set supply temperature has been reached (set DHW temperature + 5 K).
  Then it runs constantly.
  If, during heating, the actual value falls below the required set temperature, the circulation pump for DHW tank heating will temporarily cycle again.

The DHW tank is hot:

- DHW tank temperature sensor 1:
  Actual value ≥ set value
  and
  DHW tank temperature sensor 2:
  Actual value > set value −1.5 K:
- The set boiler water temperature is returned to the set weather-compensated value.
- The circulation pump for DHW tank heating stops immediately when the 3-way mixing valve is fully opened.
  or
- The circulation pump for DHW tank heating stops after expiry of the run-on time that is selected via code "62".

Calling up Coding Level 1

Note:

- The codes are displayed as plain text.
- Codes that have no function, due to the heating system equipment level or the setting of other codes, are not displayed.
- Heating systems with one heating circuit without mixing valve and one or two heating circuits with mixing valve: The heating circuit without a mixing valve is designated "Heating circuit 1" and the heating circuits with a mixing valve as "Heating circuit 2" or "Heating circuit 3". If the heating circuits were given individual designations, the selected designation and "HC1", "HC2" or "HC3" appear instead.

1. Press **OK** and ☰: simultaneously for approx. 4 sec.
2. "Coding level 1"
3. Select group of required coding address:
   - "General"
   - "Boiler"
   - "DHW"
   - "Solar"
   - "Heating circuit 1/2/3"
   - "All codes std device" In this group, all coding addresses from coding level 1 (except the coding addresses from the "Solar" group) are displayed in ascending order.
4. Select coding address
5. Select value according to the following tables and confirm with **OK**.
6. If you want to reset all codes to their factory set condition:
   Select "Standard setting" in "Coding level 1"

   Note: This also resets codes on coding level 2.

"General" Group

Coding

Coding in the factory set condition		Possible change	
System design			
00:1	One heating circuit without mixing valve A1 (heating circuit 1), without DHW heating	00:2 to 00:10	For system schemes, see the following table.

Value address 00: ...	Designation
2	One heating circuit without mixing valve A1 (heating circuit 1) with DHW heating (automatic recognition)
3	One heating circuit with mixing valve M2 (heating circuit 2) without DHW heating
4	One heating circuit with mixing valve M2 (heating circuit 2) with DHW heating
5	One heating circuit A1 (heating circuit 1) One heating circuit with mixing valve M2 (heating circuit 2) without DHW heating (automatic recognition)
6	One heating circuit A1 (heating circuit 1) One heating circuit with mixing valve M2 (heating circuit 2) with DHW heating (automatic recognition)
7	Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3) without DHW heating
8	Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3) with DHW heating
9	One heating circuit A1 (heating circuit 1) Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3) without DHW heating (automatic recognition).
10	One heating circuit A1 (heating circuit 1) Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3) with DHW heating (automatic recognition).

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
Servomotor runtime			
40:...	Runtime, isolation valve servomotor at plug 52A1. Factory set condition defaulted by boiler coding card.	40:5 to 40:199	Runtime adjustable from 5 to 199 sec.
Internal circulation pump function			
53:1	With low loss header: Boiler circuit pump only runs when there is demand if the burner is operational (with run-on time).	53:0	Boiler circuit pump always runs when there is demand.
User no.			
77:1	LON participant number.	77:1 to 77:99	LON participant number, adjustable from 1 to 99: 1 = boiler control unit 10 - 97 = Vitotronic 200-H 98 = Vitogate 99 = Vitocom **Note:** Each number must only be assigned once.
Detached house/apartment building			
7F:1	Detached house	7F:0	Apartment building Separate adjustment of holiday program and time program for DHW heating possible.
General			
8F:0	Operation in the standard menu and extended menu enabled. **Note:** The respective code is only activated when you exit the service menu (see page 81).	8F:1	Operation in the standard menu and extended menu blocked.
		8F:2	Operation enabled in the standard menu; blocked in the extended menu. Set supply temperature for external demand
Set supply temperature for external demand			
9b:70	Set minimum boiler water temperature for external demand 158°F (70°C).	9b:0 to 9b:127	Set value adjustable from 32 to 260°F (0 to 127°C) (limited by boiler specific parameters).

"Boiler" Group

Coding

Coding in the factory set condition		Possible change	
Burner Type			
02:1	Two -stage burner	02:0	Single stage burner.
		02:2	Modulating burner.
Gas/oil operation			
03:0	Gas operation.	03:1	Oil operation (irreversible).
Burner curve			
05:...	Modulating burner: Burner curve Factory set condition specified by the boiler coding card.	05:0	Linear burner curve.
		05:1 to 05:99	Non-linear burner curve $(P_T : P_{max}) \cdot 100\%$ P_T in kW: Partial output at ⅓ of the servomotor runtime P_{max} in kW: Maximum output
Boiler water temperature maximum limit			
06:87	Set to 189°F (87°C).	06:20 to 06:127	Maximum limit adjustable from 68 to 261°F (20 to 127°C). Observe the thermostat "⏀" setting (see page 45).
Flue Gas Monitor			
1F:0	With flue gas temperature sensor: Flue gas temperature is not monitored for service display.	1F:1 to 1F:250°C	When the flue gas temperature limit is exceeded, "Service" is displayed.
Burner service in 100 hours			
21:0	No service interval (hours run) selected.	21:1 to 21:100	The number of hours run before the burner should be serviced is adjustable from 100 to 10,000 h. 1 step ≙ 100 h.
Service interval in months			
23:0	No interval for service.	23:1 to 23:24	Interval adjustable from 1 to 24 months.
Service status			
24:0	No "Service" display.	24:1	"Service" display (the address is automatically set and must be manually reset after a service has been carried out).

"DHW" Group

Coding

Coding in the factory set condition		Possible change	
DHW			
67:40	For solar DHW heating: Set DHW temperature 104°F (40°C). Reheating is suppressed above the selected set temperature (DHW heating by the boiler only if solar energy is not sufficient).	67:0	No set value 3.
		67:10 to 67:95	Set DHW temperature adjustable from 50 to 203°F (10 to 95°C) (limited by boiler specific parameters). Observe the setting of coding address "56".
Enable DHW recirculation pump			
73:0	DHW recirculation pump: "ON" according to time program.	73:1 to 73:6	"ON" from once per hour for 5 min up to 6 times per hour for 5 min during the time program.
		73:7	Constantly "ON".

"Solar" Group

Only in conjunction with solar control module, type SM1.

Coding

Coding in the factory set condition		Possible change	
Speed control solar circuit pump			
02:0	Solar circuit pump (multi stage) without speed control by solar control module SM1.	02:1	Solar circuit pump (multi stage) is speed-controlled with wave pack control.
		02:2	Solar circuit pump is speed-controlled with PWM control.
DHW tank maximum temperature			
08:60	The solar circuit pump stops when the actual DHW temperature reaches the maximum DHW tank temperature 140°F (60°C).	08:10 to 08:90	The maximum DHW tank temperature is adjustable from 50 to 194°F (10 to 90°C).
Stagnation time reduction			
0A:5	To protect system components and heat transfer medium: the speed of the solar circuit pump is reduced if the actual DHW temperature is 5 K below the maximum DHW tank temperature.	0A:0	Stagnation time reduction is disabled.
		0A:1 to 0A:40	Value for stagnation time reduction is adjustable from 1 to 40 K.
Flow rate solar circuit			
0F:70	The solar circuit flow rate at maximum pump speed is 1.9 USG/min. (7 L/min.)	0F:1 to 0F:255	Flow rate adjustable from 0.03 to 6.7 USG/min. (0.1 to 25.5 L/min); 1 step ≙ 0.03 USG/min. (0.1 L/min.)
Extended solar control functions			
20:0	No extended control functions enabled.	20:1	Additional function for DHW heating.
		20:2	Differential temperature control 2.
		20:3	Differential temperature control 2 and auxiliary function.
		20:4	Differential temperature control 2 for central heating backup.
		20:5	Thermostat function.
		20:6	Thermostat function and auxiliary function.
		20:7	Solar heating via external heat exchanger without additional temperature sensor.
		20:8	Solar heating via external heat exchanger with additional temperature sensor.
		20:9	Solar heating of two DHW tanks.

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“Heating Circuit 1”, “Heating Circuit 2”, “Heating Circuit 3” Group

Coding

Coding in the factory set condition		Possible change	
Priority DHW heating			
A2:2	DHW tank priority applicable to heating circuit pump and mixing valve.	A2:0	Without DHW tank priority applicable to heating circuit pump and mixing valve.
		A2:1	DHW tank priority applies only to the mixing valves.
		A2:3 to A2:15	Modulating priority applied to mixing valve, i.e. the heating circuit receives a reduced amount of heat.
Economy function outside temperature			
A5:5	With heating circuit pump logic function (economy circuit): Heating circuit pump “OFF” when the outside temperature (AT) is 1 K higher than the set room temperature (RT_{set}) $AT > RT_{set} + 1\ K$	A5:0	Without heating circuit pump logic function.
		A5:1 to A5:15	With heating circuit pump logic function: Heating circuit pump “OFF”; see the following table.

Parameter address A5:...	With heating circuit pump logic function: Heating circuit pump “OFF”
1	$AT > RT_{set} + 5\ K$
2	$AT > RT_{set} + 4\ K$
3	$AT > RT_{set} + 3\ K$
4	$AT > RT_{set} + 2\ K$
5	$AT > RT_{set} + 1\ K$
6	$AT > RT_{set}$
7 to 15	$AT > RT_{set} - 1\ K$ to $AT > RT_{set} - 9\ K$

"Heating Circuit 1", "Heating Circuit 2", "Heating Circuit 3" Group *(continued)*

Coding in the factory set condition		Possible change	
Extended economy function mixing valve			
A7:0	Only for heating circuits with mixing valve: Without mixing valve economy function.	A7:1	With mixing valve economy function (extended heating circuit pump logic): Heating circuit pump also "OFF": - If the mixing valve has been closed for longer than 20 min. Heating circuit pump "ON": - If the mixing valve changes to control function. - If there is a risk of frost.
Pump idle time, transition reduced mode			
A9:7	With pump idle time (heating circuit pump "OFF"). (See function description on page 82).	A9:0	Without pump idle time.
		A9:1 to A9:15	With pump idle time; adjustable from 1 to 15. 1: short idle period 15: long idle period
Weather-compensated/room temperature hook-up			
b0:0	With remote control:*2 Heating mode/reduced mode: weather-compensated.	b0:1	Heating mode: weather-compensated Reduced mode: with room temperature hook-up
		b0:2	Heating mode: with room temperature hook-up Reduced mode: weather-compensated
		b0:3	Heating mode/reduced mode: with room temperature hook-up
Economy function room temperature			
b5:0	With remote control:*2 No room temperature dependent heating circuit pump logic function.	b5:1 to b5:8	Heating circuit pump logic function, see the following table.

*2 Only change the code for the heating circuit A1 for boilers without lower temperature limit or for the heating circuits with mixing valve if a remote control is connected to them.

"Heating Circuit 1", "Heating Circuit 2", "Heating Circuit 3" Group *(continued)*

	With heating circuit pump logic function:	
Parameter address b5:...	**Heating circuit pump "OFF"**	**Heating circuit pump "ON"**
1	$RT_{actual} > RT_{set} + 5$ K	$RT_{actual} < RT_{set} + 4$ K
2	$RT_{actual} > RT_{set} + 4$ K	$RT_{actual} < RT_{set} + 3$ K
3	$RT_{actual} > RT_{set} + 3$ K	$RT_{actual} < RT_{set} + 2$ K
4	$RT_{actual} > RT_{set} + 2$ K	$RT_{actual} < RT_{set} + 1$ K
5	$RT_{actual} > RT_{set} + 1$ K	$RT_{actual} < RT_{set}$
6	$RT_{actual} > RT_{set}$	$RT_{actual} < RT_{set} - 1$ K
7	$RT_{actual} > RT_{set} - 1$ K	$RT_{actual} < RT_{set} - 2$ K
8	$RT_{actual} > RT_{set} - 2$ K	$RT_{actual} < RT_{set} - 3$ K

Coding in the factory set condition		**Possible change**	
Min. supply temperature heating circuit			
C5:20	Electronic minimum supply temperature limit 68°F (20°C) (only in operation at standard room temperature).	C5:1 to C5:127	Minimum limit adjustable from 34 to 261°F (1 to 127°C) (limited by boiler-specific parameters).
Max. supply temperature heating circuit			
C6:75	Electronic maximum supply temperature limit set to 167°F (75°C).	C6:10 to C6:127	Maximum limit adjustable from 50 to 261°F (10 to 127°C) (limited by boiler-specific parameters).
Heating program - changeover			
d5:0	With external heating program changeover (observe setting for coding addresses "5d", "5E" and "5F" in the "General" group). Heating program switches to "Constant central heating with reduced room temperature" or "Standby mode" (subject to the settings of the set reduced room temperature).	d5:1	The heating program changes to "Constant operation with standard room temperature".
External heating program changeover to heating circuit			
d8:0	No heating program changeover via extension EA1.	d8:1	Heating program changeover via input DE1 at extension EA1.
		d8:2	Heating program changeover via input DE2 at extension EA1.
		d8:3	Heating program changeover via input DE3 at extension EA1.

"Heating Circuit 1", "Heating Circuit 2", "Heating Circuit 3" Group *(continued)*

Coding in the factory set condition		Possible change	
Slab curing function			
F1:0	Slab curing function disabled. Do Not Adjust	F1:1 to F1:6	Not Used
		F1:15	Not Used
Party mode time limit			
F2:8	Time limit for party mode or external heating program changeover via push button: 8 h*1. **Note:** Observe settings of coding addresses "5d", "5E", "5F" in the "General" group, as well as "d5" and "d8" in the "Heating circuit..." group.	F2:0	No time limit*1.
		F2:1 to F2:12	Time limit adjustable from 1 to 12 h*1.
Start temperature raising			
F8:-5	Temperature limit for raising reduced mode 23°F (-5°C); see example on page 83. Observe the setting of coding address "A3".	F8: + 10 to F8:-60	Temperature limit adjustable from 50 to -76°F (+10 to -60°C).
		F8:-61	Function disabled.
End temperature raising			
F9:-14	Temperature limit for raising the reduced set room temperature 7°F (-14°C); see example on page 83.	F9: + 10 to F9:-60	Limit for raising the set room temperature to the value selected for standard mode adjustable from 50 to -76°F (+10 to -60°C).
Set supply temperature increase			
FA:20	Raising the set boiler water or supply temperature by 20% when changing from operation with reduced room temperature to operation with standard room temperature. See example on page 83.	FA:0 to FA:50	Temperature rise adjustable from 0 to 50%.
Duration set supply temperature increase			
Fb:30	Duration for raising the set boiler water or supply temperature (see coding address "FA") 60 min. See example on page 83.	Fb:0 to Fb:150	Duration adjustable from 0 to 300 min; 1 step ≙ 2 min.

*1 Party mode ends automatically in the "Heating and DHW" heating program when the system changes over to operation with standard room temperature.

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Calling up Coding Level 2

Note:

- In coding level 2, all codes are accessible, including the codes from coding level 1.
- Codes that have no function due to the heating system equipment level or the setting of other codes are not displayed.
- Heating systems with one heating circuit and one or two heating circuits with mixing valve:
  In the following, the heating circuit is designated "Heating circuit 1" and the heating circuits with mixing valve as "Heating circuit 2" or "Heating circuit 3".
  If the heating circuits were given individual designations, the selected designation and "HC1", "HC2" or "HC3" appear instead.

1. Press **OK** and ☰ simultaneously for approx. 4 sec.
2. Press **OK** and ⮌ simultaneously for approx. 4 sec.
3. "Coding level 2"
4. Select group of required coding address:
   - "General"
   - "Boiler"
   - "DHW"
   - "Solar"
   - "Heating circuit 1/2/3"
   - "All codes std device"
     In this group, all coding addresses (except the coding addresses from the "Solar" group) are displayed in ascending order.
5. Select coding address.
6. Select value according to the following tables and confirm with "**OK**".
7. If you want to reset all codes to their factory set condition:
   Select "Standard setting" in "Coding level 2".

   Note: This also resets codes from coding level 1.

"General" Group

Coding

Coding in the factory set condition		Possible change	
00:1	One heating circuit A1 (heating circuit 1), without DHW heating.	00:2 to 00:10	For system schemes, see the following table.

Value address 00: ...	Designation
2	One heating circuit A1 (heating circuit 1) with DHW heating (automatic recognition)
3	One heating circuit with mixing valve M2 (heating circuit 2) without DHW heating
4	One heating circuit with mixing valve M2 (heating circuit 2) with DHW heating
5	One heating circuit without mixing valve A1 (heating circuit 1) One heating circuit with mixing valve M2 (heating circuit 2) without DHW heating (automatic recognition)
6	One heating circuit without mixing valve A1 (heating circuit 1) One heating circuit with mixing valve M2 (heating circuit 2) with DHW heating (automatic recognition).
7	Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3) without DHW heating
8	Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3) with DHW heating
9	One heating circuit without mixing valve A1 (heating circuit 1) Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3) without DHW heating (automatic recognition).
10	One heating circuit without mixing valve A1 (heating circuit 1) Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3) with DHW heating (automatic recognition).

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
12:5	With extension EA1: DHW recirculation pump runtime for brief operation: 5 min.	12:1 to 12:60	Runtime adjustable from 1 to 60 min.
1E:0	With extension EA1 (analog input 0-10V): Temperature demand from 32 to 212°F (0 to 100°C): 1V ≙ 50°F (10°C) 10V ≙ 212°F (100°C)	1E:1	Temperature demand from 86 to 248°F (30 to 120°C): 1V ≙ 86°F (30°C) 10V ≙ 248°F (120°C)
20:...	Controller integral time for low loss header in sec. Factory set condition specified by the boiler coding card. The greater the integral action time, the more accurate but slower the controller.	20:1 to 20:199	Controller integral time adjustable from 10 to 1990 sec; 1 step ≙ 10 sec.
22:...	Controller integral time for low loss header in min. Time between burner start and controller start. Factory set condition specified by the boiler coding card.	22:1 to 22:199	Controller integral time adjustable from 1 to 199 min.
2E:0	Without outside temperature sensor RF.	2E:1	With outside temperature sensor; automatic recognition
		2E:2	Outside temperature sensor RF is not used.
2F:0	Do not adjust.	-	-
30:0	Without plug-in adaptor 1 for external safety equipment.	30:1	With plug-in adaptor 1 for external safety equipment; automatic recognition.
31:1	Without plug-in adaptor 2 for external safety equipment.	31:1	With plug-in adaptor 2 for external safety equipment; automatic recognition.
32:0	Without extension AM1.	32:1	With extension AM1; automatic recognition.
33:1	Function output A1 at extension AM1: Heating circuit pump, heating circuit without mixing valve A1 (heating circuit 1).	33:0	DHW recirculation pump.
		33:2	DHW tank primary pump.
		33:3	Circulation pump, neutralizing system or flue gas/water heat exchanger.
34:1	Function output A2 at extension AM1: Heating circuit pump, heating circuit without mixing valve A1 (heating circuit 1).	34:0	DHW recirculation pump.
		34:2	DHW tank primary pump.
		34:3	Circulation pump, neutralizing system or flue gas/ water heat exchanger.
40:...	Runtime, servomotor at plug 52A1. Factory set condition defaulted by boiler coding card.	40:5 to 40:199	Runtime adjustable from 5 to 199 sec.
4A:0	Sensor 17 A not available.	4A:1	Sensor 17 A available (e.g. return temperature sensor T1); automatic recognition.
4b:0	Sensor 17 B not available.	4b:1	Sensor 17 B available (e.g. return temperature sensor T2); automatic recognition.
4C:0	Connection at plug 20A1: Switching contact, heating circuit pump.	4C:1	Primary pump, primary store system.
		4C:2	Switching contact, Therm-Control.
		4C:3	Circulation pump – flue gas/water heat exchanger.

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
4d:1	Connection at plug 29: Shunt pump.	4d:2	Boiler circuit pump.
4E:1	Connection at plug 52A1: Motor for 3-way mixing valve for return temperature control.	4E:2	Motor for 3-way mixing valve, primary store system.
4F:5	Run-on time, shunt or distribution pump 5 min.	4F:0	No pump run-on.
		4F:1 to 4F:60	Run-on time adjustable from 1 to 60 min.
52:0	Without supply temperature sensor for low loss header.	52:1	With supply temperature sensor for low loss header; automatic recognition.
53:1	With low loss header: Boiler circuit pump only runs when there is demand if the burner is operational (with run-on time).	53:0	Boiler circuit pump always runs when there is demand.
54:0	Without solar thermal system.	54:1	With Vitosolic 100; automatic recognition.
		54:2	With Vitosolic 200; automatic recognition.
		54:3	With solar control module, type SM1, without auxiliary function; automatic recognition.
		54:4	With solar control module, type SM1, with auxiliary function, e.g. central heating backup; automatic recognition.
5b:0	Without extension EA1.	5b:1	With extension EA1; automatic recognition.
5C:0	Function output 157 at extension EA1: Central fault message.	5C:1	Feed pump.
		5C:2	No function.
		5C:3	Heating circuit pump A1 is switched to low speed (reduced mode).
		5C:4	Heating circuit pump M2 is switched to low speed (reduced mode).
		5C:5	Heating circuit pump M3 is switched to low speed (reduced mode).
5d:0	Function input DE1 at extension EA1: No function.	5d:1	Heating program changeover.
		5d:2	External demand with minimum set supply temperature. Set value selected in coding address "9b".
		5d:3	External blocking.
		5d:4	External blocking with fault message.
		5d:5	Fault message input.
		5d:6	Brief operation, DHW recirculation pump (pushbutton function). Setting of runtime for DHW recirculation pump in coding address "12" in the "General" group.

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
5E:0	Function input DE2 at extension EA1: No function.	5E:1	Heating program changeover.
		5E:2	External demand with minimum set supply temperature. Set value selected in coding address "9b"
		5E:3	External blocking.
		5E:4	External blocking with fault message.
		5E:5	Fault message input.
		5E:6	Brief operation, DHW recirculation pump (push button function). Setting of runtime for DHW recirculation pump in coding address "12" in the "General" group.
5F:0	Function input DE3 at extension EA1: No function.	5F:1	Heating program changeover.
		5F:2	External demand with minimum set supply temperature. Selection of set value in coding address "9b"
		5F:3	External blocking.
		5F:4	External blocking with fault message.
		5F:5	Fault message input.
		5F:6	Brief operation, DHW recirculation pump (push button function). Setting of runtime for DHW recirculation pump in coding address "12" in the "General" group.
6C:0	Run-on time for circulation pump, neutralizing system at output A1 at extension AM1: None.	6C:1 to 6C:255	Run-on time adjustable from 1 to 255 sec.
6d:0	Run-on time for circulation pump, neutralizing system at output A2 at extension AM1: None.	6d:1 to 6d:255	Run-on time adjustable from 1 to 255 sec.
6E:50	No display correction of the outside temperature.	6E:0 to 6E:49	Display correction –5 K to Display correction –0.1 K
		6E:51 to 6E:99	Display correction +0.1 K to Display correction +4.9 K
76:0	Without LON communication module.	76:1	With LON communication module (automatic recognition).
77:1	LON participant number.	77:2 to 77:99	LON participant number, adjustable from 1 to 99: 1 = Boiler control unit 10 – 97 = Vitotronic 200-H 98 = Vitogate 99 = Vitocom **Note:** Each number must only be assigned once.

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
78:1	LON communication enabled.	78:0	LON communication disabled.
79:1	With LON communication module: Control unit is fault manager.	79:0	Control unit is not fault manager.
7A:0	Without central control of heating circuits.	7A:1	With central control (see page 82): Heating circuit without mixing valve A1 (heating circuit 1).
		7A:2	Heating circuit with mixing valve M2 (heating circuit 2).
		7A:3	Heating circuit with mixing valve M3 (heating circuit 3).
7b:1	With LON communication module: Control unit transmits the time.	7b:0	No time transmission.
7F:1	Detached house.	7F:0	Apartment building. Separate adjustment of holiday program and time program for DHW heating possible.
80:6	A fault message is displayed if a fault occurs for at least 30 sec.	80:0	Immediate fault message.
		80:2 to 80:199	The minimum fault duration until a fault message is issued is adjustable from 10 to 995 sec.; 1 step ≙ 5 sec.
81:1	Automatic summer/wintertime changeover.	81:0	Manual summer/wintertime changeover.
		81:2	Use of the radio clock receiver (automatic recognition).
		81:3	With LON communication module: The control unit receives the time.
82:3	Summer time starts: March	82:1 to 82:12	January to December
83:5	Summer time starts: Week 5 of the selected month.	83:1 to 83:5	Week 1 to week 5 of the selected month
84:7	Summer time starts: Last Sunday of the selected month.	84:1 to 84:7	Monday to Sunday
85:10	Wintertime starts: October.	85:1 to 85:12	January to December
86:5	Wintertime starts: Week 5 of the selected month.	86:1 to 86:5	Week 1 to week 5 of the selected month
87:7	Summer time starts: Last Sunday of the selected month.	87:1 to 87:7	Monday to Sunday

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
88:0	Temperature displayed in °C (Celsius).	88:1	Temperature displayed in °F (Fahrenheit).
8A:175	Do not adjust.	-	-
8F:0	Operation in the standard menu and extended menu enabled. **Note:** The respective code is only activated when you exit the service level (see page 65).	8F:1	Operation in the standard menu and extended menu blocked.
		8F:2	Operation enabled in the standard menu; blocked in the extended menu.
90:128	Time constant for calculating adjusted outside temperature 21.3 h.	90:1 to 90:199	Fast (low values) or slow (high values) matching of the supply temperature, subject to the set value when the outside temperature changes. 1 step ≙ 10 min
91:0	Connection at terminals 1 and 2 in plug [143] disabled (external heating program changeover) (see page 55).	91:1	Contact affects the following heating circuits: Heating circuit without mixing valve A1 (heating circuit 1).
		91:2	Heating circuit with mixing valve M2 (heating circuit 2).
		91:3	Heating circuits without mixing valve A1 (heating circuit 1) and heating circuit with mixing valve M2 (heating circuit 2).
		91:4	Heating circuit with mixing valve M3 (heating circuit 3).
		91:5	Heating circuits without mixing valve A1 (heating circuit 1) and heating circuit with mixing valve M3 (heating circuit 3).
		91:6	Heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3).
		91:7	Heating circuit A1 (heating circuit 1) and heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3).
93:0	Central fault message during emissions test function/service display does not affect central fault.	93:1	Central fault message during emissions test function/service display does affect central fault.
95:0	Without Vitocom 100 communication interface.	95:1	With Vitocom 100 communication interface; automatic recognition.
96:1	With extension for heating circuits 2 and 3 with mixing valve.	96:0	Without extension for heating circuits 2 and 3 with mixing valve.

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
97:2	With LON communication module: The control unit sends the outside temperature to the Vitotronic 200-H.	97:0	The outside temperature of the sensor connected to the control unit is only utilized internally.
		97:1	The control unit receives the outside temperature from the Vitotronic 200-H.
98:1	With LON communication module: Viessmann system number (in conjunction with monitoring several systems via Vitocom 300).	98:1 to 98:5	System number adjustable from 1 to 5.
99:0	Connection at terminals 2 and 3 in plug [143] disabled (external blocking/ external "Mixing valve closed") (see page 55).	99:1	No function.
		99:2	External "Mixing valve closed" Heating circuit with mixing valve M2 (heating circuit 2).
		99:3	No function.
		99:4	External "Mixing valve closed" Heating circuit with mixing valve M3 (heating circuit 3).
		99:5	No function.
		99:6	External "Mixing valve closed" Heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3).
		99:7	No function.
		99:8	External blocking.
		99:9	No function.
		99:10	External blocking/external "Mixing valve closed" Heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3).
		99:11	No function.
		99:12	External blocking/external "Mixing valve closed" Heating circuit with mixing valve M3 (heating circuit 3).
		99:13	No function.
		99:14	External blocking/external "Mixing valve closed" Heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3).
		99:15	No function.

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
9A:0	Connection at terminals 1 and 2 in plug [143] disabled (external "Mixing valve open") (see page 48).	9A:1	No function.
		9A:2	External "Mixing valve open" Heating circuit with mixing valve M2 (heating circuit 2).
		9A:3	No function.
		9A:4	External "Mixing valve open" Heating circuit with mixing valve M3 (heating circuit 3).
		9A:5	No function.
		9A:6	External "Mixing valve open" Heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3).
		9A:7	No function.
9b:70	Set supply temperature for external demand 158°F (70°C).	9b:0 to 9b:127	Set value adjustable from 32 to 261°F (0 to 127°C). (limited by boiler specific parameters).
9C:20	With LON communication module: Monitoring LON participants. If there is no response from a participant after 20 min, the values specified inside the control unit are used. Only then will a fault message be issued.	9C:0	No monitoring.
		9C:5 to 9C:60	Time adjustable from 5 to 60 min.
9d:0	Do not adjust	-	-
9F:8	Differential temperature 8 K; only in conjunction with heating circuits with mixing valve M2 and M3.	9F:0 to 9F:40	Differential temperature adjustable from 0 to 40 K.

"Boiler" Group

Coding

Coding in the factory set condition		Possible change	
02:1	Two -stage burner	02:0	Single stage burner.
		02:2	Modulating burner.
03:0	Gas operation. Factory set condition specified by the boiler coding card.	03:1	Oil operation (irreversible).
		03:2	This occurs automatically, if an incorrect boiler coding card is inserted or none is present.
04:...	Switching hysteresis, burner: Factory set condition specified by the boiler coding card.	04:0	Switching hysteresis 4 K (see page 100).
		04:1	Switching hysteresis, heat demand-dependent (see page 78) ERB50 function (values from 6 to 12 K).
		04:2	ERB80 function (values from 6 to 20 K).
05:...	Modulating burner: Burner curve Factory set condition specified by the boiler coding card.	05:0	Linear burner curve.
		05:1 to 05:99	Non-linear burner curve $(P_T : P_{max})\cdot 100\%$ P_T in kW: Partial output at ⅓ of the servomotor runtime P_{max} in kW: Maximum output
06:87	Maximum limit of the boiler water temperature set to 189°F (87°C). Factory set condition specified by the boiler coding card.	06:20 to 06:127	Maximum limit adjustable from 68 to 261°F (20 to 127°C). **Note:** Observe the thermostat "⏱" setting (see page 39).
08:...	Maximum burner output in kW. Factory set condition defaulted by boiler coding card.	08:0 to 08:199	Maximum output adjustable from 0 to 199 kW.
09:...	Maximum burner output in kW. Factory set condition defaulted by boiler coding card.	09:0 TO 08:199	Maximum output adjustable from 0 to 19,900 kW. 1 step ≙ 100 kW
0A:...	Burner base load in kW. Factory set condition specified by the boiler coding card.	0A:0 to 0A:100	Non-linear burner curve $(P_G:P_{max})\cdot 100\%$ P_G in kW: Base output P_{max} in kW: Maximum output

"Boiler" Group *(continued)*

Coding in the factory set condition		Possible change	
0C:0	No function	0C:1	Constant return temperature control. Observe coding address "4E" in the group.
0d:1	With Therm-Control, controls the mixing valves of downstream heating circuits.	0d:0	Without Therm-Control.
13:...	Shutdown differential in K The burner is switched off when the set boiler water temperature is exceeded. Factory set condition defaulted by boiler coding card.	13:0	Without stop differential.
		13:2 to 13:20	Stop differential adjustable from 2 to 20 K.
14:...	Minimum burner runtime in min. Factory set condition defaulted by boiler coding card.	14:0 to 14:15	Minimum runtime adjustable from 0 to 15 min.
15....	Runtime servomotor mod. burner. Factory set condition defaulted by boiler coding card.	15:5 to 15:199	Runtime adjustable from 5 to 199 sec.
16:...	Burner offset with start optimization in K (temporary reduction of the set boiler water temperature after burner start). Factory set condition specified by the boiler coding card.	16:0 to 16:15	Offset adjustable from 0 to 15 K.
1A:...	Start optimization in min. Factory set condition specified by the boiler coding card.	1A:0 to 1A:60	Duration of start optimization adjustable from 0 to 60 min.
1b	Time from burner ignition to the start of control. Factory set condition defaulted by boiler coding card.	1b:0 to 1b:199	Regulation delay adjustable from 1 to 199 sec.
1C:120	Signal B4 at plug [41] is not available: Compensation of signal delay for hours run meter. Time from burner start signal initiation at T2 in plug [41] to opening of the solenoid valve. At each burner start, 120 sec. will be taken off the runtime.	1C:1 to 1C:199	Delay adjustable from 1 to 199 sec. This time is deducted from the operating time for every burner start. e.g. operating situations in which the burner is shut down via the mechanical temperature controller, but a burner demand is still present (hours run continue to be counted). If required, change coding address "06".
1d:...	Function, shunt pump. Factory set condition defaulted by boiler coding card.	1d:0	Function according to boiler coding card.
		1d:1	Shunt pump always runs when the burner is active.

"Boiler" Group *(continued)*

Coding in the factory set condition		Possible change	
1F:0	With flue gas temperature sensor: Flue gas temperature is not monitored for service display.	1F:1 to 1F:250°C	When the flue gas temperature limit is exceeded, "Service" is displayed.
21:0	No service interval (hours run) selected.	21:1 to 21:100	The number of hours run before the burner should be serviced is adjustable from 100 to 10,000 h. 1 step ≙ 100 h.
23:0	No interval for service.	23:1 to 23:24	Interval adjustable from 1 to 24 months.
24:0	No "Service" display.	24:1	"Service" display (the address is automatically set and must be manually reset after a service has been carried out).
26:0	Burner fuel consumption (stage 1): No count if "26:0" and "27:0" are programmed.	26:1 to 26:99	Input of 0.1 to 9.9; 1 step ≙ 0.1 L/h or gallons/h **Note:** Values of coding addresses "26" and "27" are added together.
27:0	Burner fuel consumption (stage 1): No count if "26:0" and "27:0" are programmed.	27:1 to 27:199	Input of 10 to 1990; 1 step ≙ 10 L/h or gallons/h
28:0	No burner interval ignition.	28:1 to 28:24	Time interval adjustable from 1 to 24 h. The burner is force started for 30 sec. each time.
29:0	Burner fuel consumption (stages 1 and 2); No count if "29:0" and "2A:0" are programmed.	29:1 to 29:99	Input of 0.1 to 9.9; 1 step ≙ 0.1 L/h or gallons/h **Note:** Values of coding addresses "29" and "27" are added together.
2A:0	Burner fuel consumption (stage 2); no count if "29:0" and "2A:0" are programmed.	2A:1 to 2A:199	Input of 10 to 1990; 1 step ≙ 10 L/h or gallons/h
2d:0	Shunt pump "ON" only in case of demand.	2d:1	Shunt pump constantly "ON".

"DHW" Group

Coding in the factory set condition		Possible change	
55:0	DHW tank heating, hysteresis ± 2.5 K.	55:1	Adaptive DHW tank heating enabled (see page 115).
		55:2	DHW tank temperature control with 2 DHW tank temperature sensors (see page 116).
		55:3	DHW tank temperature control, primary store system (see page 116).
56:0	Set DHW temperature adjustable from 50 to 140°F (10 to 60°C).	56:1	Set DHW temperature adjustable from 50 to 203°F (10 to 95°C). **Note:** Observe the max. permissible DHW temperature. Adjust the temperature controller "".
58:0	Without auxiliary function for DHW heating.	58:10 to 58:60	Input of a second set DHW temperature, adjustable from 50 to 203°F (10 to 95°C) (observe coding addresses "56" and "63").
59:0	DHW tank heating: Set start point −2.5 K Set stop point +2.5 K	59:1 to 59:10	Start point adjustable from 1 to 10 K below set value.
5A:0	For DHW heating: The set supply temperature is determined by the highest system supply temperature demand. Scan of the temperature in the "Diagnosis" menu, "General" ("Common dem. temp"), see page 81.	5A:1	For DHW heating: The set supply temperature is determined by the DHW tank supply temperature demand. Scan of the temperature in the "Diagnosis" menu, "General" ("Common dem. temp"), see page 81.
60:20	During DHW heating, the common supply temperature is max. 20 K higher than the set DHW temperature.	60:10 to 60:50	The differential between the common supply temperature and the set DHW temperature is adjustable from 10 to 50 K.
61:1	The circulation pump for DHW tank heating is started immediately.	61:0	The circulation pump for DHW tank heating is started depending on the boiler water temperature.
62:10	Circulation pump with a run-on time after DHW tank heating of max. 10 min.	62:0	Circulation pump without run-on.
		62:1 to 62:15	Run-on time adjustable from 1 to 15 min.
64:2	During party mode and after external changeover to constant operation with the standard room temperature: Constant DHW heating enabled and DHW circulation pump "ON".	64:0	No DHW heating, DHW circulation pump "OFF".
		64:1	DHW heating and DHW circulation pump according to time program.

"DHW" Group *(continued)*

Coding in the factory set condition		Possible change	
66:4	Input of the set DHW temperature: At the control unit programming unit and all installed Vitotrol 300A remote controls.	66:0	At the control unit programming unit.
		66:1	At the control unit programming unit and remote control heating circuit A1 (heating circuit).
		66:2	At the control unit programming unit and remote control heating circuit with mixing valve M2 (heating circuit 2).
		66:3	At the control unit programming unit and remote control heating circuit with mixing valve M3 (heating circuit 3).
		66:5	At the remote control heating circuit A1 (heating circuit 1).
		66:6	At the remote control heating circuit with mixing valve M2 (heating circuit 2).
		66:7	At the remote control heating circuit with mixing valve M3 (heating circuit 3).
67:40	For solar DHW heating: Set DHW temperature 104°F (40°C). Reheating is suppressed above the selected set temperature (DHW heating by the boiler only if solar energy is not sufficient).	67:0	No third set value.
		67:10 to 67:95	Set DHW temperature adjustable from 50 to 203°F (10 to 95°C) (limited by boiler specific parameters). Observe the setting of coding address "56".
68:8	With 2 DHW tank temperature sensors (code "55:2"): DHW tank heating stop point at set value x 0.8.	68:2 to 68:10	Factor adjustable from 0.2 to 1; 1 step ≙ 0.1
69:7	With 2 DHW tank temperature sensors (code "55:2"): DHW tank heating start point at set value x 0.7.	69:1 to 69:9	Factor adjustable from 0.1 to 0.9; 1 step ≙ 0.1
6A:75	Runtime, servomotor, mixing valve, heat exchanger set, Vitotrans 222, (80 and 120 kW): 75 sec.	6A:10 to 6A:255	For heat exchanger set Vitotrans 222 (240 kW): set 113 sec. Runtime adjustable from 10 to 255 sec.
70:0	DHW recirculation pump "ON" according to time program when DHW heating is enabled.	70:1	DHW recirculation pump "ON" according to time program.
71:0	DHW recirculation pump: "ON" according to time program.	71:1	"OFF" during DHW heating to the first set value.
		71:2	"ON" during DHW heating to the first set value.
72:0	DHW recirculation pump: "ON" according to time program.	72:1	"OFF" during DHW heating to the second set value.
		72:2	"ON" during DHW heating to the second set value.
73:0	DHW recirculation pump: "ON" according to time program.	73:1 to 73:6	"ON" from once per hour for 5 min. up to 6 times per hour for 5 min. during the time program.
		73:7	Constantly "ON".
75:0	DHW recirculation pump "ON" during economy mode according to time program.	75:1	DHW recirculation pump "OFF" during economy mode.

"Solar" Group

Only in conjunction with solar control module, type SM1.

Coding

Coding in the factory set condition		Possible change	
00:8	The solar circuit pump starts when the collector temperature exceeds the actual DHW temperature by 8 K.	00:2 to 00:30	The differential between the actual DHW temperature and the start point for the solar circuit pump is adjustable from 2 to 30 K.
01:4	The solar circuit pump stops when the differential between the collector temperature and the actual DHW temperature is less than 4 K.	01:1 to 01:29	The differential between the actual DHW temperature and the stop point for the solar circuit pump is adjustable from 1 to 29 K.
02:0	Solar circuit pump (multi stage) without speed control by solar control module SM1.	02:1	Solar circuit pump (multi stage) is speed-controlled with wave pack control.
		02:2	Solar circuit pump is speed-controlled with PWM control.
03:10	The temperature differential between the collector temperature and actual DHW temperature is regulated to 10 K.	03:5 to 03:20	The differential temperature control between the collector temperature and actual DHW temperature is adjustable from 5 to 20 K.
04:4	Controller amplification of the speed control 4%/K.	04:1 to 04:10	Controller amplification adjustable from 1 to 10%/K.
05:10	Minimum speed of the solar circuit pump 10% of the maximum speed.	05:2 to 05:100	Minimum speed of the solar circuit pump is adjustable from 2 to 100%.
06:75	Maximum speed of the solar circuit pump 75% of the maximum possible speed.	06:1 to 06:100	Maximum speed of the solar circuit pump is adjustable from 1 to 100%.
07:0	Interval function of the solar circuit pump switched off.	07:1	Interval function of the solar circuit pump switched on. To capture the collector temperature more accurately, the solar circuit pump starts for short cycles.
08:60	The solar circuit pump stops when the actual DHW temperature reaches the maximum DHW tank temperature 140°F (60°C).	08:10 to 08:90	The maximum DHW tank temperature is adjustable from 50 to 194°F (10 to 90°C).
09:130	The solar circuit pump stops if the collector temperature reaches 266°F (130°C) (maximum collector temperature to protect the system components).	09:20 to 09:200	The temperature is adjustable from 68 to 392°F (20 to 200°C).

"Solar" Group *(continued)*

Coding in the factory set condition		Possible change	
0A:5	To protect system components and heat transfer medium: The solar circuit pump speed is reduced when the actual DHW tank temperature is 5 K below the maximum DHW tank temperature.	0A:0	Stagnation time reduction is disabled.
		0A:1 to 0A:40	Value for stagnation time reduction is adjustable from 1 to 40 K.
0b:0	Frost protection function for solar circuit switched off.	0b:1	Frost protection function for solar circuit switched on (not required with Viessmann heat transfer medium).
0C:1	Delta T monitoring switched on. No flow rate captured in the solar circuit, or flow rate too low.	0C:0	Delta T monitoring switched off.
0d:1	Night circulation monitoring switched on. Unintentional flow rate is captured in the solar circuit (e.g. at night).	0d:0	Night circulation monitoring switched off.
0E:1	Calculation of solar yield with Viessmann heat transfer medium.	0E:2	Calculation of solar yield with water as heat transfer medium (never adjust, as operation is only possible with Viessmann heat transfer medium).
		0E:0	Calculation of solar yield switched off.
0F:70	The solar circuit flow rate at maximum pump speed is 1.9 USG/min. (7 L/min.)	0F:1 to 0F:255	Flow rate adjustable from 0.03 to 6.7 USG/min. (0.1 to 25.5 L/min); 1 step ≙ 0.03 USG/min. (0.1 L/min.)
10:0	Target temperature control switched off (see coding address "11").	10:1	Target temperature control switched on.
11:50	Set solar DHW temperature 68°F (50°C). - Target temperature control switched on (code "10:1"): Temperature at which the solar heated water in the DHW tank is to be stratified. - Extended control functions set to heat two DHW tanks (code "20:8"): The second DHW tank is heated when one DHW tank reaches its set DHW temperature.	11:10 to 11:90	The set solar DHW temperature is adjustable from 50 to 194°F (10 to 90°C).
12:10	Minimum collector temperature 50°F (10°C). The solar circuit pump will only start when the set minimum collector temperature is exceeded.	12:0	Minimum collector temperature function disabled.
		12:1 to 12:90	The minimum collector temperature is adjustable from 34 to 194°F (1 to 90°C).

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"Solar" Group *(continued)*

Coding in the factory set condition		Possible change	
20:0	No extended control functions enabled.	20:1	Additional function for DHW heating.
		20:2	Differential temperature control 2.
		20:3	Differential temperature control 2 and auxiliary function.
		20:4	Differential temperature control 2 for central heating backup.
		20:5	Thermostat function.
		20:6	Thermostat function and auxiliary function.
		20:7	Solar heating via external heat exchanger without additional temperature sensor.
		20:8	Solar heating via external heat exchanger with additional temperature sensor
		20:9	Solar heating of two DHW tanks.
22:8	Start temperature differential for central heating backup: 8 K. Switching output [22] is switched on when the temperature at sensor [7] exceeds the temperature at sensor [10] by the selected value.	22:2 to 22:30	Start temperature differential for central heating backup is adjustable from 2 to 30 K.
23:4	Stop temperature differential for central heating backup: 4 K. Switching output [22] is switched off when the temperature at sensor [7] falls below the stop point. The stop point is the sum of the temperature at sensor [10] and the value selected for the stop temperature differential.	23:2 to 23:30	Stop temperature differential for central heating backup is adjustable from 1 to 29 K.
24:40	Start temperature for thermostat function 104°F (40°C). Start temperature for thermostat function ≤ stop temperature for thermostat function: Thermostat function, e.g. for reheating. Switching output [22] is switched on when the temperature at sensor [7] falls below the start temperature for the thermostat function. Start temperature for thermostat function > stop temperature for thermostat function: Thermostat function, e.g. for utilizing excess heat. Switching output [22] is switched on when the temperature at sensor [7] exceeds the start temperature for the thermostat function.	24:0 to 24:100	Start temperature for thermostat function is adjustable from 0 to 100 K.

"Solar" Group *(continued)*

Coding in the factory set condition		Possible change	
25:50	Stop temperature for thermostat function 122°F (50°C). Start temperature for thermostat function ≤ stop temperature for thermostat function: Thermostat function e.g. for reheating. Switching output [22] is switched off when the temperature at sensor [7] exceeds the start temperature for the thermostat function. Start temperature for thermostat function > stop temperature for thermostat function: Thermostat function e.g. for utilizing excess heat. Switching output [22] is switched off when the temperature at sensor [7] falls below the start temperature for the thermostat function.	25:0 to 25:100	Stop temperature for thermostat function is adjustable from 0 to 100 K.
26:1	Priority for DHW tank 1 – with alternate heating. Only when setting code "20:8"	26:0	Priority for DHW tank 1 – without alternate heating
		26:2	Priority for DHW tank 2 – without alternate heating.
		26:3	Priority for DHW tank 2 – with alternate heating.
		26:4	Alternate heating without priority for one of the DHW tanks.
27:15	Alternate heating time 15 min. The DHW tank without priority is heated at most for the duration of the set alternate heating time if the DHW tank with priority is heated up.	27:5 to 27:60	The alternate heating time is adjustable from 5 to 60 min.
28:3	Alternate pause time 3 min. After the selected alternate heating time for the DHW tank without priority has expired, the rise in collector temperature is captured during the alternate pause time.	28:1 to 28:60	The alternate pause time is adjustable from 1 to 60 min.

"Heating Circuit 1", "Heating Circuit 2", "Heating Circuit 3" Group

Coding

Coding in the factory set condition		Possible change	
A0:0	Without remote control.	A0:1	With Vitotrol 200A; automatic recognition.
		A0:2	With Vitotrol 300A or Vitohome 300; automatic recognition.
A1:0	Only with Vitotrol 200A: All possible settings at the remote control can be accessed.	A1:1	Only party mode can be set at the remote control.
A2:2	DHW tank priority applicable to heating circuit pump and mixing valve.	A2:0	Without DHW tank priority applicable to heating circuit pump and mixing valve.
		A2:1	DHW tank priority applies only to the mixing valves.
		A2:3 to A2:15	Modulating priority applied to mixing valve, i.e. the heating circuit receives a reduced amount of heat.
A3:2	Outside temperature below 34°F (1°C): Heating circuit pump "ON". Outside temperature above 37°F (3°C): Heating circuit pump "OFF".	A3:-9 to A3:15	Heating circuit pump "ON/ OFF" (see the following table).

Note: If a value below 34°F (1°C) is selected, there is a risk that pipes outside the thermal envelope of the building could freeze up.
The standby mode in particular should be taken into consideration, e.g. during holidays.

Parameter Address A3:...	Heating circuit pump	
	"ON"	**"OFF"**
-9	14°F (-10°C)	17.5°F (-8°C)
-8	16°F (-9°C)	19.5°F (-7°C)
-7	17.5°F (-8°C)	21°F (-6°C)
-6	19.5°F (-7°C)	23°F (-5°C)
-5	21°F (-6°C)	25°F (-4°C)
-4	23°F (-5°C)	26.5°F (-3°C)
-3	25°F (-4°C)	28.5°F (-2°C)
-2	26.5°F (-3°C)	30°F (-1°C)
-1	28.5°F (-2°C)	32°F (0°C)
0	30°F (-1°C)	34°F (1°C)
1	32°F (0°C)	35.5°F (2°C)
2 to 15	34°F (1°C) to 57°F (14°C)	37.5°F (3°C) to 61°F (16°C)

"Heating Circuit 1", "Heating Circuit 2", "Heating Circuit 3" Group *(continued)*

Coding in the factory set condition		Possible change	
A4:0	With frost protection.	A4:1	No frost protection; this setting is only possible if code "A3:-9" has been selected. **Note:** Observe information regarding coding address "A3".
A5:5	With heating circuit pump logic function (economy circuit): Heating circuit pump "OFF" when the outside temperature (AT) is 1 K higher than the set room temperature (RT_{set}) $AT > RT_{set} + 1$ K.	A5:0	Without heating circuit pump logic function.
		A5:1 to A5:15	With heating circuit pump logic function: Heating circuit pump "OFF"; see the following table.

Parameter address A5:...	With heating circuit pump logic function: Heating circuit pump "OFF"
1	$AT > RT_{set} + 5$ K
2	$AT > RT_{set} + 4$ K
3	$AT > RT_{set} + 3$ K
4	$AT > RT_{set} + 2$ K
5	$AT > RT_{set} + 1$ K
6	$AT > RT_{set}$
7 to 15	$AT > RT_{set} - 1$ K $AT > RT_{set} - 9$ K

Coding in the factory set condition		Possible change	
A6:36	Extended economy control disabled.	A6:5 to A6:35	Extended economy control enabled, i.e. the burner and heating circuit pump will be stopped and the mixing valve closed at a variable value, adjustable between 41 and 95°F (5 and 35°C) plus 1.8°F (1°C). The base value is the adjusted outside temperature. This value is based on the actual outside temperature and a time constant, which takes the cooling down of an average building into consideration.
A7:0	Only for heating circuits with mixing valve: Without mixing valve economy function.	A7:1	With mixing valve economy function (extended heating circuit pump logic): Heating circuit pump also "OFF": - If the mixing valve has been closed for longer than 12 min. Heating circuit pump "ON": - If the mixing valve changes to control function. - If there is a risk of frost.
A9:7	With pump idle time (heating circuit pump "OFF") (See function description on page 82).	A9:0	Without pump idle time.
		A9:1 to A9:15	With pump idle time; adjustable from 1 to 15. 1: short idle period 15: long idle period
AA:2	With output reduction by temperature sensor 17A.	AA:0	Without output reduction.
		AA:1	No function.

"Heating Circuit 1", "Heating Circuit 2", "Heating Circuit 3" Group *(continued)*

Coding in the factory set condition		Possible change	
b0:0	With remote control:*2 Heating mode/reduced mode: weather-compensated.	b0:1	Heating mode: weather compensated Reduced mode: with room temperature hook-up
		b0:2	Heating mode: with room temperature hook-up Reduced mode: weather compensated
		b0:3	Heating mode/reduced mode: with room temperature hook-up
b2:8	With remote control and for the heating circuit, operation with room temperature hook-up must be programmed:*2 Room influence factor 8.	b2:0	Without room influence.
		b2:1 to b2:64	Room influence factor adjustable from 1 to 64.
b5:0	With remote control:*2 No room temperature dependent heating circuit pump logic function.	b5:1 to b5:8	Heating circuit pump logic function, see the following table.

	With heating circuit pump logic function:	
Parameter address b5:...	**Heating circuit pump "OFF"**	**Heating circuit pump "ON"**
1	$RT_{actual} > RT_{set} + 5$ K	$RT_{actual} < RT_{set} + 4$ K
2	$RT_{actual} > RT_{set} + 4$ K	$RT_{actual} < RT_{set} + 3$ K
3	$RT_{actual} > RT_{set} + 3$ K	$RT_{actual} < RT_{set} + 2$ K
4	$RT_{actual} > RT_{set} + 2$ K	$RT_{actual} < RT_{set} + 1$ K
5	$RT_{actual} > RT_{set} + 1$ K	$RT_{actual} < RT_{set}$
6	$RT_{actual} > RT_{set}$	$RT_{actual} < RT_{set} - 1$ K
7	$RT_{actual} > RT_{set} - 1$ K	$RT_{actual} < RT_{set} - 2$ K
8	$RT_{actual} > RT_{set} - 2$ K	$RT_{actual} < RT_{set} - 3$ K

Coding in the factory set condition		Possible change	
b6:0	With remote control:*2 Without quick heat-up/ quick setback.	b6:1	With quick heat-up/quick setback (see function description on page 105).
b7:0	With remote control and for the heating circuit, operation with room temperature hook-up must be programmed:*2 Without start optimization.	b7:1	With start optimization, max. heat-up time delay 2 h 30 min.
		b7:2	With start optimization, max. heat-up time delay 15 h 50 min.
b8:10	With remote control and for the heating circuit, operation with room temperature hook-up must be programmed:*2 Heat-up gradient start optimization 10 min/K.	b8:11 to b8:255	Heat-up gradient adjustable from 11 to 255 min/K.
b9:0	With remote control and for the heating circuit, operation with room temperature hook-up must be programmed:*2 Without learning start optimization.	b9:1	With learning start optimization.

*2 Only change the code for the heating circuit A1 for boilers without lower temperature limit or for the heating circuits with mixing valve if a remote control is connected to them.

"Heating Circuit 1", "Heating Circuit 2", "Heating Circuit 3" Group *(continued)*

Coding in the factory set condition		Possible change	
C0:0	With remote control:*2 Without stop optimization.	C0:1	With stop optimization, max. setback time delay 1 h.
		C0:2	With stop optimization, max. setback time delay 2 h.
C1:0	With remote control:*2 Without stop optimization.	C1:1 to C1:12	With stop optimization of setback time delay, adjustable from 10 to 120 min; 1 step ≙ 10 min
C2:0	With remote control:*2 Without learning stop optimization.	C2:1	With learning stop optimization.
C3:125	Only for heating circuits with mixing valve: Mixing valve runtime 125 sec.	C3:10 to C3:255	Runtime adjustable from 10 to 255 sec.
C4:1	System dynamics: Mixing valve control characteristics	C4:0 to C4:3	Controller responds too quickly (cycles between "Open" and "Closed"): select a lower value. Controller responds too slowly (temperature is not held sufficiently): select a higher value.
C5:20	Electronic minimum supply temperature limit 68°F (20°C) (only in operation at standard room temperature).	C5:1 to C5:127	Minimum limit adjustable from 34 to 261°F (1 to 127°C). (limited by boiler-specific parameters).
C6:75	Electronic maximum supply temperature limit set to 167°F (75°C).	C6:10 to C6:127	Maximum limit adjustable from 50 to 261°F (10 to 127°C). (limited by boiler-specific parameters).
C8:31	With remote control and for the heating circuit, operation with room temperature hook-up must be programmed:*2 No room influence limit.	C8:1 to C8:30	Room influence limit adjustable from 1 to 30 K.
d5:0	With external heating program changeover (observe setting of coding address "5d", "5E" and "5F" and "91" in the "General" group): Heating program switches to "Constant central heating with reduced room temperature" or "Standby mode" (subject to the settings of the set reduced room temperature).	d5:1	The heating program changes to "Constant operation with standard room temperature".
d8:0	No heating program changeover via extension EA1	d8:1	Heating program changeover via input DE1 at extension EA1.
		d8:2	Heating program changeover via input DE2 at extension EA1.
		d8:3	Heating program changeover via input DE3 at extension EA1.

*2 Only change the code for the heating circuit A1 for boilers without lower temperature limit or for the heating circuits with mixing valve if a remote control is connected to them.

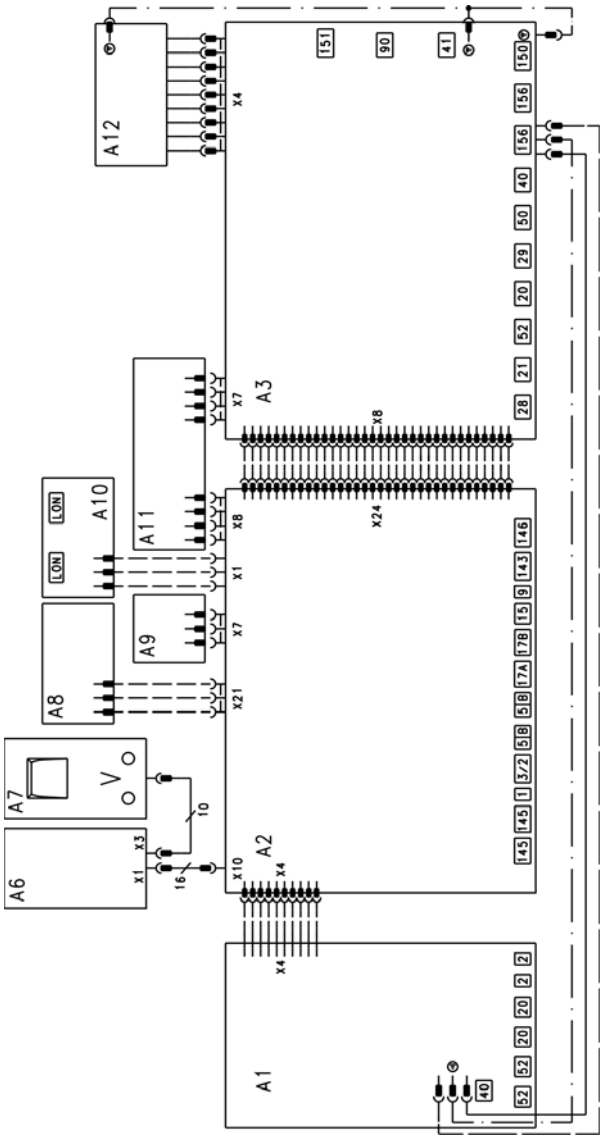
"Heating Circuit 1", "Heating Circuit 2", "Heating Circuit 3" Group *(continued)*

Coding in the factory set condition		Possible change	
E1:1	With remote control: Set day temperature adjustable at the remote control unit from 50 to 86°F (10 to 30°C).	E1:0	Set day temperature adjustable from 37.5 to 73.5°F (3 to 23°C).
		E1:2	Set day temperature adjustable from 62.5 to 98.5°F (17 to 37°C).
E2:50	With remote control: No display correction of the actual room temperature.	E2:0 to E2:49	Display correction –5 K to Display correction –0.1 K
		E2:51 to E2:99	Display correction +0.1 K to Display correction +4.9 K
F1:0	Slab curing function disabled.	F1:1 to F1:6	Only for heating circuits with mixing valve: Slab curing function adjustable in accordance with 6 optional temperature/time profiles (see page 107).
		F1:15	Constant supply temperature 68°F (20°C) (see page 107).
F2:8	Time limit for party mode or external heating program changeover via push button: 8 h*1. **Note:** Observe settings of coding addresses "5d", "5E", "5F" in the "General" group, as well as "d5" and "d8" in the "Heating circuit..." group.	F2:0	No time limit*1.
		F2:1 to F2:12	Time limit adjustable from 1 to 12 h*1.
F8:-5	Temperature limit for raising reduced mode 23°F (-5°C); see example on page 83. Observe the setting of coding address "A3".	F8:+10 to F8:-60	Temperature limit adjustable from +50 to -76°F (+10 to -60°C).
		F8:-61	Function disabled.
F9:-14	Temperature limit for raising the reduced set room temperature 7°F (-14°C); see example on page 83.	F9:+10 to F9:-60	Limit for raising the set room temperature to the value selected for standard mode adjustable from +50 to -76°F (+10 to -60°C).
FA:20	Raising the set boiler water or supply temperature by 20% when changing from operation with reduced room temperature to operation with standard room temperature. See example on page 83.	FA:0 to FA:50	Temperature rise adjustable from 0 to 50%.
Fb:60	Duration of the set boiler water or supply temperature rise (see coding address "FA") 60 min. See example on page 83.	Fb:0 to Fb:150	Duration adjustable from 0 to 300 min; 1 step ≙ 2 min.

*1 Party mode ends automatically in the "Heating and DHW" heating program when the system changes over to operation with standard room temperature.

Connection and Wiring Diagram, Type GW2B

Overview

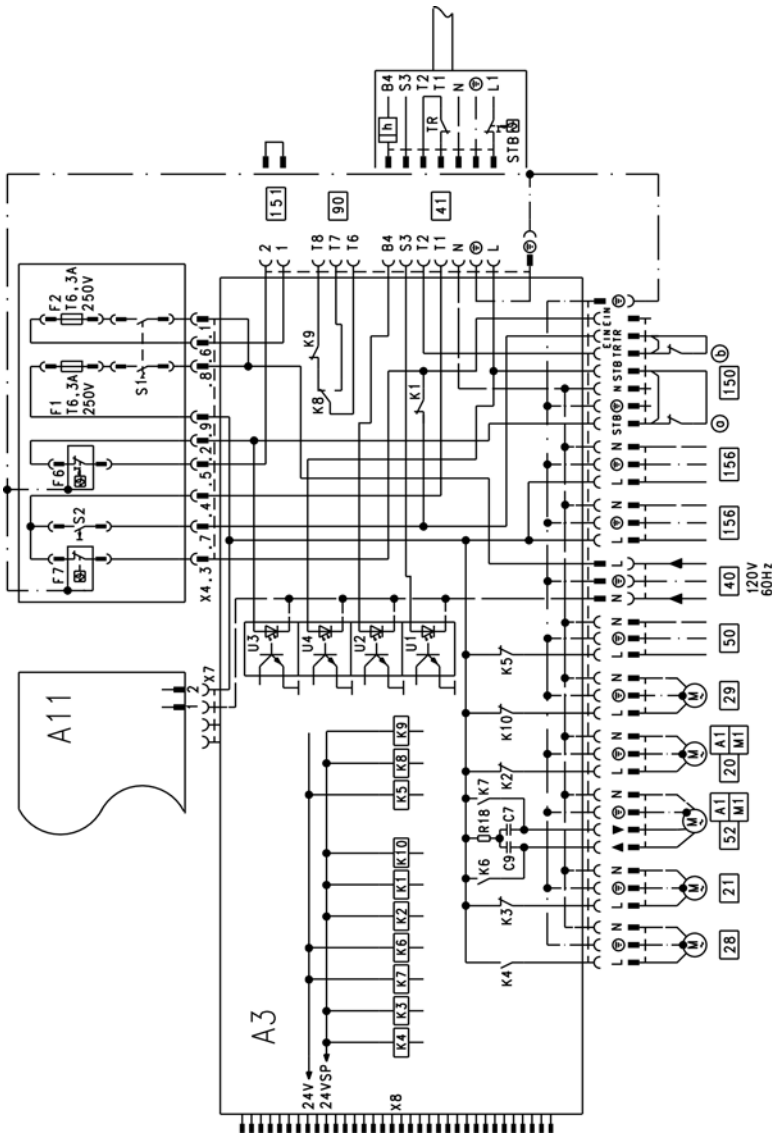


Legend

A1	PCB, extension for heating circuits 2 and 3 with mixing valve	A8	PCB
A2	PCB low voltage	A9	Boiler Coding card
A3	PCB 120V~	A10	LON communication module (accessory)
A6	Programming unit	A11	Power supply unit PCB
A7	Optolink PCB/emissions test switch	A12	Programming unit ON/OFF switch
		X	Electrical interfaces

Connection and Wiring Diagram, Type GW2B *(continued)*

PCB 120V~

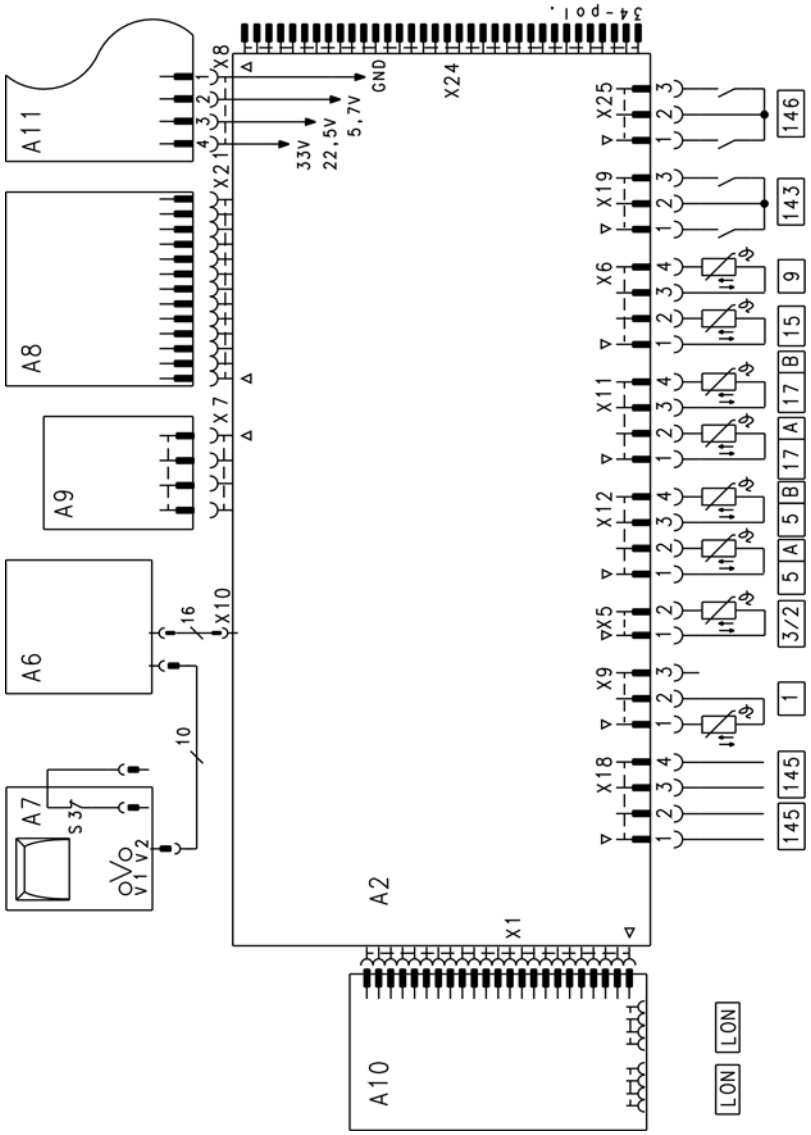


Legend

20	Heating circuit pump or Primary pump, primary store system or Circulation pump, flue gas/water heat exchanger or Switching output
21	Circulation pump for DHW tank heating (accessory)
28	DHW recirculation pump (on site)
29	Shunt pump or boiler circuit pump (on site)
40	Power supply, 120V/60 Hz
41	Oil/gas burners
50	Output for multiple fault messages
52	Motor for 3-way mixing valve, return temperature control or Motor for 3-way mixing valve, primary store system (Optional accessory, not used)
90	Burner stage 2/modulating
150	External connections (remove jumper when connecting) ⓐ External safety equipment ⓑ External blocking
151	Safety chain (potential -free)
156	Power supply connection for accessories
F1, F2	Fuse
F6	Fixed high limit "⇵"
F7	Adjustable high limit
K1-K10	Relay
S1	ON/OFF switch
S2	TEST key
X	Electrical interfaces

Connection and Wiring Diagram, Type GW2B *(continued)*

PCB low voltage

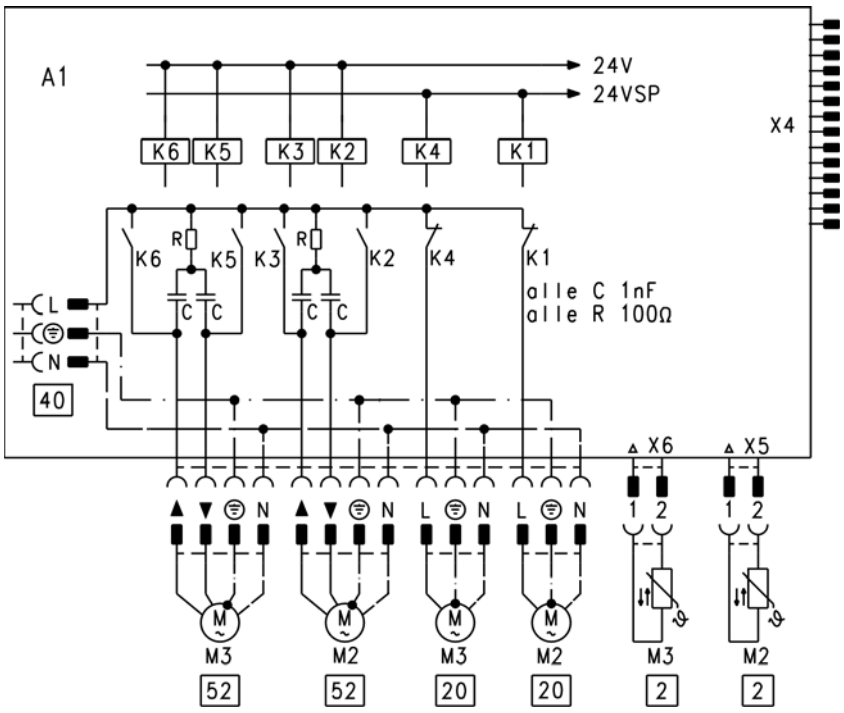


Legend

1	Outside temperature sensor/radio clock receiver
3	Boiler temperature sensor
5 A	DHW tank temperature sensor
5 B	DHW tank temperature sensor 2 for primary store system)
17 A	Therm-control temperature sensor or Return temperature sensor T1
17 B	Return temperature sensor T2 or Temperature sensor primary store system (Optional accessory, not used)
15	Flue gas temperature sensor
9	Supply temperature sensor, low loss header
143	External hook-up
145	KM BUS participant
146	External hook-up
LON	Cable for data exchange between control units (accessories)
S3	Emissions test switch
V1	Fault indicator (red)
V2	ON indicator (green)
X	Electrical interfaces

Connection and Wiring Diagram, Type GW2B *(continued)*

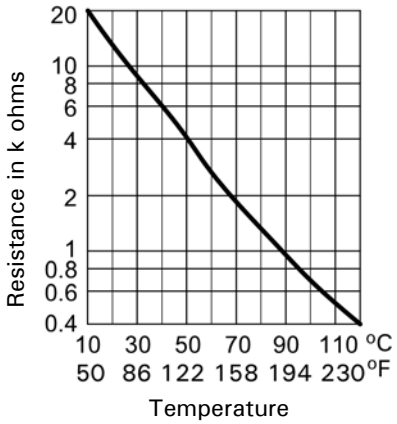
PCB, extension for heating circuits 2 and 3 with mixing valve



Legend

2	Supply temperature sensors	52	Mixing valve motors
20	Heating circuit pumps	K1-K6	Relay
40	Power supply	X	Electrical interfaces

Sensors



Boiler water, DHW tank, supply (Therm-Control sensor), return and room temperature sensors

Note:

- The supply temperature sensor can be used as a contact or immersion temperature sensor.
  Note: The supply temperature sensor in the mixing valve extension kit is a contact temperature sensor.
- The room temperature sensor is connected at terminals 3 and 4 in the Vitotrol 300A.

Installation and service instructions, Vitotronic 300A

Viessmann NTC 10 kΩ (blue marking)

1. Pull corresponding plug.
2. Check the sensor resistance and compare it with the curve.
3. In the case of severe deviation, check the installation and replace the sensor if required.

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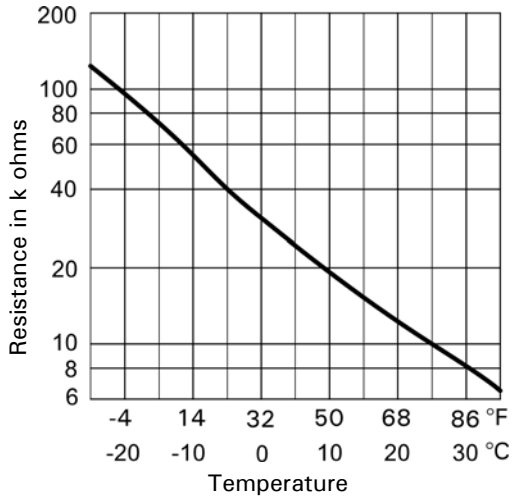
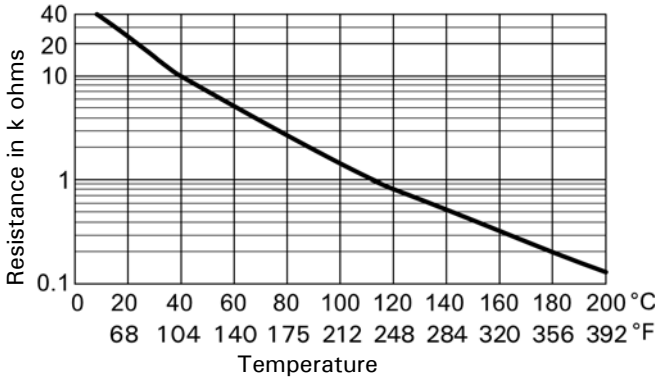
Sensors *(continued)*



Outside temperature sensor

Viessmann NTC 10 kΩ

1. Pull plug [1].
2. Check the sensor resistance across plug terminals "1" and "2" and compare with the curve.
3. If the results are very different from the curve, disconnect the wires from the sensor and repeat the test on the sensor.
4. Depending on the result, replace the lead or the outside temperature sensor.



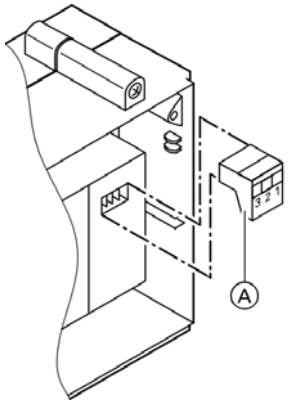
Flue gas temperature sensor

Viessmann NTC 20 kΩ (orange identification)

When an entered limit in the Vitotronic 300 is reached (see coding address "1F" in "Boiler") group, a service display appears.

1. Disconnect plug [15].
2. Check the sensor resistance and compare it with the curve.
3. In the case of severe deviation, check the installation and replace the sensor if required.

Extension Kit, Mixing Valve



▲ Mixing valve "Open"
▼ Mixing valve "Closed"

Components:

- Mixing valve motor, with 13 ft. (4.0 m) connecting cable (not for flanged mixing valve)
- Plug for connecting the heating circuit pump
- Flow temperature sensor as contact temperature sensor for recording the flow temperature, with 19 ft. (5.8 m) long lead.

Changing the rotational direction (if required)

1. Pull 3-PIN plug Ⓐ in the mixing valve motor and reinsert turned through 180°.
2. Check the rotational direction.

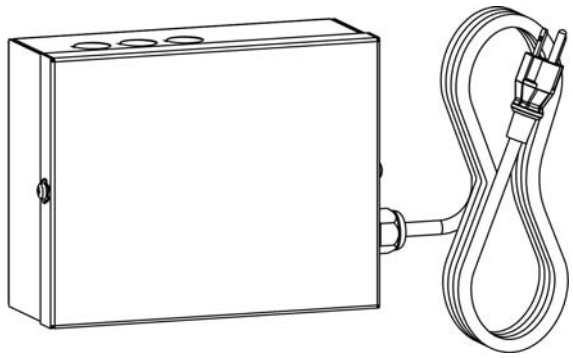
Manual mixing valve adjustment

Lift the motor lever, unhook the mixing valve handle and pull plug Ⓐ.

Specification for the mixing valve motor

Rated voltage	120V~
Rated frequency	60 Hz
Power consumption	4 W
Protection class	II
Permissible ambient temperature	
■ During operation	32 to 104°F (0 to +40°C)
■ During storage and transport	-4 to 149°F (–20 to +65°C)

Extension EA1 Accessory (optional)



Digital data inputs DE1 to DE3

Functions:

- External heating program changeover, separate for heating circuits 1 to 3
- External blocking
- External blocking with fault message input
- External demand with minimum boiler water temperature
- Fault message input
- Brief operation of the DHW recirculation pump

When connecting external contacts, observe the requirements of safety category II, i.e. 8.0 mm air-gap and creep path or maintain a 2.0 mm insulation thickness against 'live' parts.

Input function assignment

Select the input functions by means of the following codes in the "General" group at the boiler control unit:

- DE1: Coding address "5D"
- DE2: Coding address "5E"
- DE3: Coding address "5F"

Assigning the heating program changeover function to the heating circuits

The allocation of the heating program changeover to the relevant heating circuit is selected via coding address "D8" in the "Heating circuit..." group:

- Code "D8:1": Changeover via input DE1
- Code "D8:2": Changeover via input DE2
- Code "D8:3": Changeover via input DE3

The effect of the heating program changeover is selected via coding address "D5" in the "Heating circuit..." group.

Duration of the heating program changeover

- Contact constantly closed:
  The changeover is active as long as the contact is closed.
- Contact only closed briefly via pushbutton:
  The changeover is enabled for the time selected in coding address "F2" in the "Heating circuit..." group.

DHW recirculation pump runtime for brief operation

The DHW recirculation pump can be started outside the times when it is enabled according to the time program.

The DHW recirculation pump is started by closing the contact at DE1, DE2 or DE3 by means of a pushbutton. The runtime is adjusted via coding address "3D" in the "General" group.

Analogue input 0–10V

The 0–10V hook-up provides an additional set boiler water temperature:

0–1V Is taken as "no default for set boiler water temperature".

Note: Ensure DC separation between the LV output and the earth conductor of the onsite voltage source.

Coding address "1E" in the "General" group:

- "1E:0" ≙ temperature demand adjustable in the range from 32 to 212°F (0 to 100°C) 1V ≙ 50°F (10°C) set value change 10V ≙ 212°F (100°C) set value change
- "1E:1" ≙ temperature demand adjustable in the range from 86 to 248°F (30 to 120°C) 1V ≙ 86°F (30°C) set value change 10V ≙ 248°F (120°C) set value change

Output [157]

Connection of a central fault messaging facility or signalling reduced mode (reduction of the heating circuit pump speed).

Select the function of output [157] via coding address "5C" in the "General" group.

Refer to the EA1 module Installation Instructions

Type GW2B

Ordering parts

The following information is required:

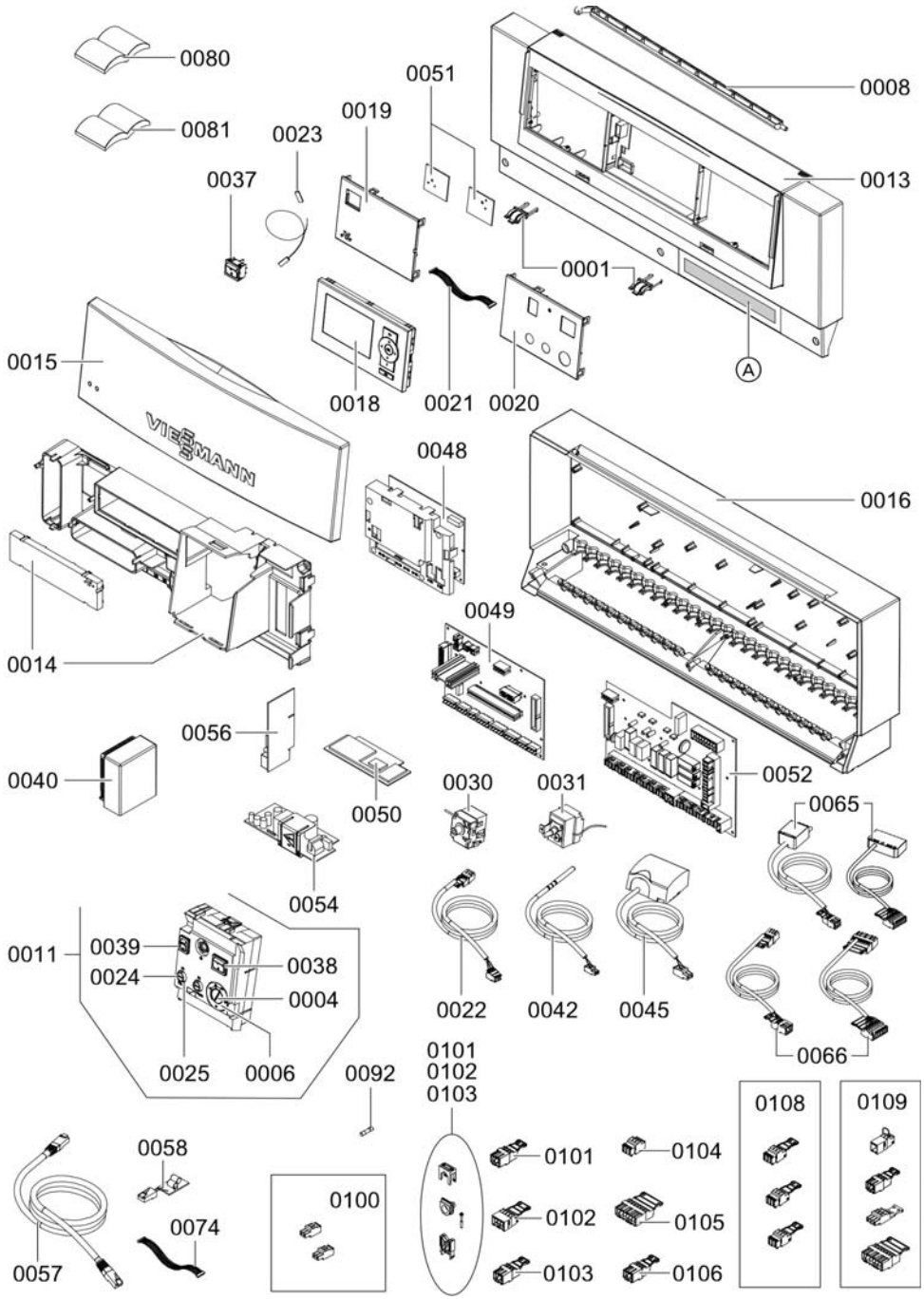
- Serial no. (see type plate Ⓐ)
- Position number of the part (from this parts list)

Standard parts are available from your local supplier.

Parts

0001 Hinge
0004 Temperature controller rotary selector
0006 Temperature controller stop dial
0008 Supporting stay
0011 Safety valve with wiring
0013 Casing front with frame
0014 PCB cover
0015 Front flap
0016 Rear section of enclosure
0018 Programming unit
0019 Fascia left
0020 Fascia right
0021 Ribbon cable, 14-pole
0022 Connecting cable for extension for heating circuits 2 and 3 with mixing valve
0023 Connecting cable, emissions test switch
0024 Fuse holder cap for control fuse
0025 Fuse holder for control fuse
0030 High limit safety cut-out
0031 Temperature controller
0037 Emissions test switch, single-pole
0038 ON/OFF switch, 2-pole
0039 "TEST" key, single-pole
0040 Outside temperature sensor [1]
0042 Temperature sensor with plug
0045 Contact temperature sensor with plug (supply temperature sensor)
0048 PCB, extension heating circuits 2 and 3 with cover
0049 PCB low voltage
0050 PCB
0051 PCBs, Optolink and emissions test switch
0052 PCB 120V~
0054 Power supply unit PCB
0056 LON communication module
0057 LON cable
0058 Terminator (2 pieces)
0065 Burner connecting cable with plug [41] (for boilers with pressure-jet oil/gas burners) and burner connecting cable with plug [90]
0066 Burner connecting cable with plug [41] and burner connecting cable with plug [90] for Vitocrossal
0074 Connection line
0080 Installation and service instructions
0081 Operating instructions
0092 Fuse 6.3A (slow)/250V~
0100 Plug for LV (7 pieces)
0101 Plug for pumps (3 pieces)
0102 Plug [52] (3 pieces)
0103 Plug [156] (3 pieces)
0104 Power supply plug [40] (3 pieces)
0105 Plug [150]
0106 Plug [50] (3 pieces)
0108 Plugs [143], [145], [146] (3-pole)
0109 Burner plugs [41], [90], [151] and [191]

Type GW2B *(continued)*



Specifications

Rated voltage	120V~
Rated frequency	60 Hz
Rated current	2 x 6A
Power consumption	10 W
Protection class	I
Permiss. ambient temperature	
■ During operation	32 to 104°F (0 to +40°C) Installation in living spaces or boiler rooms (standard ambient conditions)
■ During storage and transport	-4 to 149°F (−20 to +65°C)

Rated relay output breaking capacity at 120V~

20	Heating circuit pump or Primary pump, primary store system or Circulation pump, flue gas/water heat exchanger or Switching output	2 A~ *3
21	Circulation pump for DHW tank heating	2 A~ *3
28	DHW recirculation pump	2 A~ *3
29	Shunt pump/boiler circuit pump	2 A~ *3
50	Central fault message	2 A~ *3
52	Motor, 3-way mixing valve, return temperature control or Motor, 3-way mixing valve, primary store system or Mixing valve motor, extension kit, mixing valve	0.1 A~ *3
41	Burner	3 A~
90	Burner (two-stage)	0.5 A~
90	Burner (modulating)	0.1 A~

*3 Total max. 6 A~

Quick Reference

°C	°F
-40	-40
-35	-31
-25	-13
-20	-4
-18	0
-16	+3
-14	+7
-12	+10
-10	+14
-9	+16
-8	+18
-7	+19
-6	+21
-5	+23
-4	+25
-3	+27
-2	+28
-1	+30
0	+32
+1	+34
+2	+36
+3	+37
+4	+39
+5	+41
+6	+43
+7	+45
+8	+46
+9	+48
+10	+50
+12	+54
+14	+57
+16	+61
+18	+64
+20	+68
+25	+77
+30	+86
+35	+95
+40	+104
+50	+122
+60	+140
+70	+158
+80	+176
+90	+194
+100	+212
+110	+230

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